United Nations A/64/258

General Assembly

Distr.: General
6 August 2009

Original: English

Sixty-fourth session
Item 55 (a) of the provisional agenda*
Sustainable development: implementation of Agenda 21, the Programme for the Further Implementation of Agenda 21 and the outcomes of the World Summit on Sustainable Development

Agricultural technology for development

Report of the Secretary-General

Summary

Agricultural technologies are vital to sustainable rural development, both to increase crop and livestock productivity and to strengthen resilience of agricultural systems. Traditional emphasis on yield maximization has been tempered in recent years by growing recognition of the need to ensure the long-run sustainability of yield improvements and to preserve vital rural ecosystems and their functions. The recent food crisis and slow progress towards the achievement of the Millennium Development Goal of eradicating hunger have highlighted the wide disparities in technologies used and productivity achieved in different agricultural systems. While input and resource-intensive agriculture is the norm in many developed and middle-income developing countries, many developing countries continue to rely on low-input, low-productivity agriculture. Even as the former group of countries need to shift towards less intensive and more environmentally sound methods, farmers in many developing countries would benefit from greater input use. Yet, in principle, they should also benefit from the latest scientific knowledge and field testing of sustainable methods able to achieve high and stable yields and resilience in the face of climate change. To do so, however, will require a combination of measures, including scaled-up research on adapted technologies for local agroecological conditions, strengthened and reoriented extension services, greater investments in farmers' education and training and closer interaction between research and farming communities.

The decision of the Commission on Sustainable Development at its seventeenth session provides a useful strategic framework for addressing agricultural technology challenges in a comprehensive way.

* A/64/150.

09-44705 (E) 280809

Please recycle

Contents

		Paragraphs	*Page*
I.	Overview	1–3	3
II.	Review of agricultural productivity and sustainability challenges	4–17	3
III.	Supporting technology development	18–33	7
IV.	Boosting agriculture sustainably	34–58	12
V.	Summary of recommendations	59–65	20

I. Overview

1. The present report has been prepared in response to General Assembly resolution 62/190, entitled "Agricultural technology for development", in which the Assembly requested the Secretary-General to submit to the Assembly at its sixty-fourth session a report on agricultural technologies and conditions for their effective deployment, assessing their contribution to development.

2. The purpose of the report is to assess the recent evidence on how agricultural technology development and deployment can best achieve the objectives of boosting productivity and promoting growth and food security, especially in low-productivity agricultural systems, and ensuring resilience and long-run sustainability of agricultural production. This is a well trodden theme, and has been the subject of several United Nations studies and reports over the years. The intent of the present report is not to revisit old ground, but rather to examine the old question in the light of several new challenges that confront agriculture today. These include: (a) the 2008 food crisis (exacerbated by a spate of shocks that hit the world economy); (b) the continuing low rate of agricultural productivity growth in Africa (which faces particular challenges, due in part to the diversity of agroecological conditions, crops and agricultural systems); (c) the potential impact of climate change; (d) the question of risk management with regard to some of the promising technologies (of which the most frequently mentioned are genetically modified organisms and biofuels); (e) the slower moving ecological crisis and, in particular, the ecological unsustainability of high-input modern agriculture; (f) the question of intellectual property and its relationship to agricultural technology; and (g) the difficulties of reaching key groups, especially small farmers and women farmers. On a number of these challenges, national and global policymakers have introduced a variety of response measures at least since 1992. The objective of the report is to provide policy guidance to decision makers on an integrated approach as to what works and why, what may be needed to scale up successful experiences and adapt them to local realities, especially in challenging production environments, and what additional actions may be called for.

3. The report benefited from inputs received from the Food and Agriculture Organization of the United Nations, the International Fund for Agricultural Development, the United Nations Environment Programme and from the analysis and conclusions presented in the International Assessment of Agricultural Knowledge, Science and Technology for Development. It also draws upon the relevant outcomes of the seventeenth session of the United Nations Commission on Sustainable Development[1] that pertain to the effective deployment and scaling-up of technologies for agriculture and rural development.

II. Review of agricultural productivity and sustainability challenges

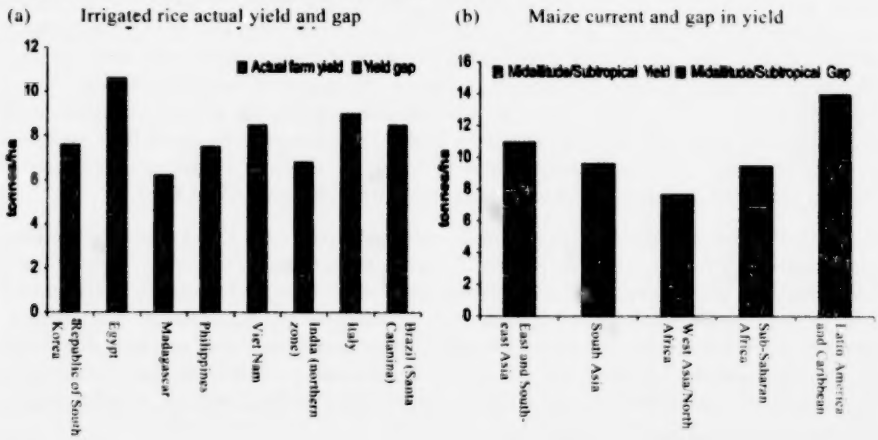
4. Although agricultural technology has often been thought of as a combination of seeds, inputs and practices that increase the yield potential of crops and livestock, and bridge the gap between the potential yield and actual yield on the farm, in recent years the concept has been expanded to incorporate sustainability concerns, risk management, and indigenous knowledge and practice. In particular, there is increasing emphasis on soil husbandry practices and water conservation methods.

[1] *Official Records of the Economic and Social Council, 2009, Supplement No. 9* (E/2009/29).

5. Accordingly, it is useful to think of agricultural technology in systemic terms, as a complex of institutions, knowledge, practices and communities which collaborate to produce results that enhance the current and long-term productivity of natural resources, and thus cater to human development needs. At one end of the spectrum are agricultural research institutions, where the goal is to raise yield levels in experimental farms through improved cultivars, genetic modification, and techniques of land and water management. Next in line are dissemination institutions, especially extension systems that seek to bring the resultant scientific knowledge to farmers and private sector or other input suppliers. Indeed, the great success of the Green Revolution lay in the speed with which the knowledge (and hence the higher yield levels) were disseminated. This continues to be the greatest window of opportunity for enhancing agricultural productivity. Today, while the yields of wheat and maize in the United States of America and Europe are relatively high (about 80 per cent of the potential),[2] they are much lower in developing countries, especially in sub-Saharan Africa, and for orphan crops.[3] Even without a major breakthrough in improved varieties, bringing the yield levels on farms in developing countries closer to genetic potential can bring about 40 to 800 per cent increases in maize yields,[4] 500 to 1,000 per cent in cassava, and 10 to 60 per cent in rice yields[5] (figure 1).[6]

Figure 1

Crop yield and gap for irrigated rice[7] and maize[8]



[2] Potential farm yields are generally lower than those in a controlled setting in a research station. Actual farm yields are even lower and are dependent on management practices and level and timing of input applications.

[3] This is important for the food security of the poor, but receives little attention from the private sector.

[4] Pingali, P. (ed.). (2001), International Maize and Wheat Improvement Centre (Centro internacional de Mejoramiento de Maíz y Trigo), 1999-2000 World maize facts and trends. Meeting world maize needs: technological opportunities and priorities for the public sector. Mexico, D.F.: CIMMYT.

[5] Food and Agriculture Organization of the United Nations (FAO) (2004a), "Rice and narrowing the yield gap".

[6] InterAcademy Council (2004), "Realizing the promise and potential of African agriculture".

[7] FAO (2004a).

[8] Pingali, P., Pandey, S. (2000), "Meeting world maize needs".

6. In the past, the predominant share of agricultural research was in the public sector, but the picture has changed quite substantially. In areas where there is a closer relationship between research output and profitability (especially where research results are embodied in tangible products, such as seeds, fertilizers, pesticides and other inputs), private sector enterprises have taken on the bulk of research and dissemination. The optimal role of the public sector may include the direct promotion of research in strategic and neglected areas, including where outputs are less tangible in nature, where the benefits are less likely to be commercializable (e.g., longer-term benefits, collective, rather than individual benefits, and ecological objectives), and where the cost-benefit ratio is adverse (e.g., orphan crops, research on local conditions and indigenous knowledge). The public sector may also need to be more actively involved in the regulation of the private sector enterprises, including private sector research and extension services, in order to ensure that these comply with overall societal goals.

7. Another important form of dissemination is through agricultural education institutions, which train new corps of scientists and extension agents. These need to be complemented by other institutions, including those that supply inputs, credit and insurance.

8. The last two institutions are particularly important where risk factors dominate decision-making, for example in marginal and fragile environments, which are extensive in Africa and among rural poor communities. In Africa, input costs are three times the world market prices, yields are highly variable because of rainfall dependence, and crop insurance is usually not available. There, farming communities look for yield stability, especially in bad years, to maintain a minimal level of household food security. Instead of a high input agricultural model, they prefer complex and diversified crop and livestock systems which minimize risk. This inhibits the use of potentially higher-yielding cultivars and farming practices that may not be as resilient. Local livestock breeds generally have low genetic yield potential, due to the absence of historical selection. Importation of high-yielding breeds, however, often requires more nutritional inputs than are typically available in local production systems and requires a ready market and processing capacity for perishable meat and milk products. Similarly, imported germplasm can be ill-adapted to the local environment, requiring more inputs for disease control. All these require investment in risk-management techniques and associated financial instruments.

9. A number of crops and livestock species with large yield gaps, such as maize, cassava and small ruminants, play a significant role in the livelihood of the rural poor in developing countries. Maize, for example, is Africa's most important food crop and is increasingly important to meet Africa's growing urban demand for convenient food products.[9] Traditional maize production, however, is inherently risky, as it does not tolerate drought and erratic rainfall. Cassava is Africa's second most important food staple in terms of per capita calories consumed and also an important source of animal feed. Yet, cassava yield gap has not narrowed in the last decade. Moreover, various diseases and pests cause considerable depression in actual yields.[10]

[9] Ibid.

[10] Ibid.

10. Besides the favourability of agroecological and agronomic conditions, productivity is also related to management methods, technologies and knowledge available to farmers. Even in most favourable areas where farmers typically have access to modern farming inputs, yields could remain low because of lack of soil, water, and crop management knowledge. Not only do farmers need to know how much fertilizer to apply and be able to afford it; they must also know when and how to apply it, taking into account rainfall, solar radiation, etc. For livestock, farmers may lack the knowledge and experience to balance rations properly, detect estrus or control diseases that are often associated with higher-producing animals.

11. Even where such information is available, farmer adoption has been limited because, in addition to the lack of support institutions, security of tenure in land and water, and access to markets, highly location-specific knowledge is needed about crop-soil-nutrient-water management and animal husbandry, which requires a significant amount of time for experimentation. On-farm yields are also limited by availability of labour and finance, lack of institutional support, cultural preferences, gender differences in technology use and information access. The marginal benefits of conducting research on orphan crops, such as sorghum, millet, cassava, yams and legumes, and on small ruminants and buffaloes, are thus very large, because management studies have been limited and fewer genotype improvements have been made.

12. In recent years, a number of international assessments and forums have highlighted the importance of agriculture for economic development, food security, livelihoods and ecosystem services. Agriculture has functions beyond the production of commodities (food, feed, fibres, biofuels, medicinal products and ornaments), which include non-commodity outputs such as improvement of livelihood, enhancement of environmental services, conservation of natural resources and maintenance of social and cultural traditions. Increasing productivity and resilience in agriculture through effective technologies and environmentally benign production practices is seen as key to achieving the Millennium Development Goals, as well as adaptation to climate change.

13. Agricultural productivity growth in Africa, for instance, is vital in attaining food security because agriculture represents 70 per cent of full-time employment, 33 per cent of gross domestic product and 40 per cent of exports earnings.[11] Agricultural productivity growth is therefore an engine of economic growth. In addition, more than three quarters of the poor and hungry in sub-Saharan Africa reside in rural areas and depend on agriculture for their livelihood.

14. Smallholders dominate the agricultural sector in developing countries and have shown a capability of adopting new technology options where the right incentives and market opportunities exist. In addition to supporting institutions, developing markets for traditional crop and livestock products could have more immediate impact on farmers' income than additional research and development on improved varieties and breeds. Response to incentives and market opportunities varies with socio-economic status and cultural values. Incentives must be adapted to these situations by putting local farming communities at the centre of productivity improvement programmes.

[11] International Food Policy Research Institute, (2002), "Ending hunger in Africa: only the small farmer can do it".

15. Boosting agriculture can set in motion a virtuous cycle of dynamic growth. International Food Policy Research Institute has estimated that, for every dollar of additional income created in the agricultural sector, the economy as a whole will grow by about 2.5 dollars. Due to the multipliers between agriculture and the non-farm sector, the urban poor benefit along with the rural poor from broad-based agricultural productivity growth. Each 10 per cent increase in smallholder agricultural productivity in Africa can thus move almost 7 million people above the dollar-a-day poverty line.[12] Past efforts have focused on increasing yields in favourable agroecological conditions, but increasingly, efforts will have to focus on degraded land and resource-poor small-scale farmers that are tilling marginal and more vulnerable lands.

16. The focus on increasing yields and productivity must be balanced with ecological stewardship to avoid past negative environmental consequences. Historically, these consequences were often unforeseen, as they occurred over time and some occurred outside of traditional farm boundaries. Agriculture has been associated with overexploitation of freshwater resources, pollution of water basins, deforestation and destructive land use change, and greenhouse gas emissions.[13]

17. A more sustainable set of agriculture practices and models has emerged over recent years, although many are still in an experimental or early deployment phase. The challenge is to scale up and diffuse these sustainable practices across agroecological zones, in order to provide a credible alternative to the traditional input-intensive model. The key to widespread deployment of the new models is that environmental sustainability and high yields must be shown to be compatible and even mutually reinforcing.

III. Supporting technology development

18. Major assessments all come to the same conclusions, namely: (a) greater investment in agriculture is needed; (b) resource-poor farmers, women and ethnic minorities should be targeted; (c) a fundamental shift in agricultural knowledge, science and technology is needed so that development and sustainability goals can be met successfully (International Assessment of Agricultural Knowledge, Science and Technology for Development, 2009b; High-Level Task Force on Food Security; report of the seventeenth session of the Commission on Sustainable Development). That shift needs to account for the ecosystem services supporting and supported by agriculture, the complexity of agricultural systems and the unforeseen environmental impacts within diverse social and ecological contexts.

19. The factors affecting the productivity, resilience and sustainability of agricultural systems fall into the following broad categories.[14]

---

[12] Ibid.

[13] Refer to International Assessment of Agricultural Knowledge, Science and Technology report ("Agriculture at a crossroads: global report, 2009") for details on environmental implications of agricultural practices.

[14] FAO (2004a).

A. Biophysical factors

20. The impact on yields of biophysical variables is more difficult to address than the other factors. Weather and climate variability, soil types, water availability, pest and disease pressure and weed propensity are often taken as a given. The impacts of rainfall variability can be assuaged with irrigation technologies. However, this would require Government investment for building the basic infrastructure as well as, when appropriate, the institutions required to manage water access rights. Soil composition, pest pressure and weed propensity can be changed over time through management programmes, as they depend on tillage, aeration, pest control, crop systems, etc.

B. Technical and management factors

21. The best varieties and breeds often fail to express their potential on farmers' fields because of inadequate investment in the development and dissemination of complementary crop-management technologies. Research on and promotion of improved crop and land-management technologies lags behind that of improved varieties. Even where such information is available, farmer adoption has been limited for reasons seen above. Demonstration and pilot projects involving neighbouring farmers' fields can help to overcome resistance to adopting new agricultural technologies.[15] Other important factors include farmers' schooling, access to credit and contact with extension agents.[16]

22. More research on crop and livestock productivity and limiting factors is needed. An exemplary case of research is that done on cassava yields in Kenya and Uganda. Where it was found that average cassava yields are less than one fifth of the maximum yields recorded in the same region. When the limiting factors were isolated, soil fertility was found to be the key limiting factor, followed by weeds and rainfall, with soil texture and pest and diseases last.[17] This research contradicts accepted beliefs that cassava is tolerant to poor soil conditions and drought. In addition, only 12 per cent of farmers considered weeding to be important, while 68 per cent perceived pest and diseases as very important. Although farmers could potentially double yields with improved genotypes, the wide variation in current field yields in Uganda indicates that, even without fertilizer and improved genotype, yields could be significantly increased. Therefore, with proper studies and innovative extension services, African yields in grain equivalent could increase by 3 to 5 tons/ha in semi-arid regions growing one crop per year, and by 13 to 16 tons/ha in humid regions with two to three crops annually.[18]

---

[15] World Bank Institute (2008), "Improving rice productivity and achieving water savings. Achieving more with less: SRI — a new way of rice cultivation".

[16] Abdulai, A., Huffman, W. E. (2005), The Diffusion of New Agricultural Technologies: The Case of Crossbred-Cow Technology in Tanzania, *American Journal of Agricultural Economics*, 87:3, 645-659.

[17] Fermont, A. M., et al. (2009), Closing the cassava yield gap: an analysis from smallholder farms in East Africa. *Field Crops Research*, 112, pp. 24-36.

[18] International Assessment of Agricultural Knowledge, Science and Technology (2009).

C. Socio-economic factors

23. Weed management and integrated soil fertility management practices, many of which are labour-intensive, can also be an important yield-limiting factor, as indicated in the cassava production case. Although uncontrolled weed growth may reduce yields by 50 to 65 per cent, farmers weeded much less than the optimal three weed operations per growing cycle. Less well-endowed households have a harder time increasing yields because they are constrained in all factors of production. Moreover, in a multistress environment, removing one source of stress will increase production less than in an environment facing only one or two sources of stress.

24. Simple practices, such as increasing plant density, would reduce weeds and thus labour demand. Combining organic and inorganic fertilizers, targeted microdosage of fertilizers, inter-cropping dual-purpose legumes, and reducing nutrient removals by providing alternative sources of fuels so that the stems and crop residues can be left in the field, can go a long way to reduce the need for purchased inputs. FAO recommends simple farming concepts and tools to reduce labour time required to carry out land preparation, planting and weed control.[19] Some inexpensive tools that can be used to alter conventional methods of land preparation include hand jab direct planters (which directly plant crops into unprepared land) and the magoye ripper (which allows for simultaneous land opening and seed planting in a single pass).[20]

D. Institutional/policy/research factors

25. Research to improve cultivars such as sorghum, millet, cassava and yams, and cattle and goat breeds, and to adapt their management to specific agroclimatic zones, has been underfunded. Such research has been of little interest to private agribusiness, and research funding for public national and international research centres has stagnated in recent years. The share of agriculture in official development assistance has declined sharply over the past two decades, but this trend may be reversing following the 2008 food crisis: in July 2009, the G-8 countries pledged $20 billion for global agricultural development.[21]

26. Yield potential in wheat has continued to increase at the rate of 1 per cent per year over the past three decades since the Green Revolution.[22] The development of super-high-yielding varieties of rice and wheat using conventional breeding techniques is expected to increase yield by 15 to 20 per cent.[23] These improvements have been associated with research centres that have developed plants with durable resistance to a wide spectrum of insects and diseases and which are more tolerant to a variety of physical stresses. These centres were also able to develop cereal grains with enhanced taste and nutritional qualities. However, with the recent exception of

---

[19] FAO (2004b), "Saving time and labour".

[20] FAO (2005), "Labour-saving technologies and practices for households".

[21] Glickman, D., Bertini, C. (2009), The G-8 announcement on agricultural development: can it save the world from hunger? "Global Agricultural Development", The Chicago Council on Global Affairs.

[22] Pingali, P., Heisey, W. (1999), Cereal crop productivity in developing countries: past trends and future prospects. Working Paper 99-03, International Maize and Wheat Improvement Centre (Centro internacional de Mejoramiento de Maíz y Trigo).

[23] FAO (2005).

cassava, progress in orphan crops has been limited. In addition, little research has been conducted on how to intensify, in a sustainable manner, crop-livestock systems that play an important role in smallholder agriculture.

E. Technology transfer factors

27. Lately, high fertilizer prices have reinforced environmental concerns to provide an impetus to the adoption of less fertilizer-dependent technologies to increase productivity, including integrated crop management and genetic improvement. Most hybrid varieties respond well to fertilizers but have similar yields to traditional varieties without fertilizer. Since hybrid seeds are more expensive, it is not always economical to introduce them if fertilizer inputs are not affordable or available. Other technologies, such as the system of rice intensification, that get higher yields with lower water and nutrient inputs through better soil moisture management and planting density, could be an option. Similarly, modern biotechnology tools complement conventional breeding approaches rather than substituting for them.

28. The enormous success of the Green Revolution in enhancing food supplies and food security in the developing world is well known. The development and promotion of modern, high-yielding varieties, was the most important factor contributing to this success, complemented by the expansion of irrigation, mechanization, specialization, and the use of chemical fertilizers and pesticides. Also crucial was a mosaic of institutions and policies, including for extension, research, education, cooperatives and marketing, and input supply. While the Revolution led to dramatic production increases, especially in Asia and Latin America in the 1960s and 1970s, the rate of growth was not sustained. Growth of global cereal yields has declined from an average of 3.3 per cent per year during the 1960s to under 1 per cent per year since 1990.[24] In addition, this capital-intensive and irrigation-dependent package, has had only limited impact in marginal production areas and where irrigation is not available.

29. At its seventeenth session, the Commission on Sustainable Development concluded that a new Sustainable Green Revolution should broaden the focus of agricultural investments from productivity to consider also resilience and long-run sustainability, including the protection of ecosystem functions and mitigation of environmental impacts. Even in Asia where the Green Revolution was most successful, land degradation, expanding deserts, shrinking forests and competition for water has obliged Asia to produce not only efficiently, but also in ways that respect the environment.[25]

30. Agricultural extension services are among the most important rural services in developing countries.[26] Returns to extension in many cases exceed returns to agricultural research. A review of social rates of return to research and extension in 95 developing countries finds a return for extension of 80 per cent (compared to

[24] World Development Indicators (2008), World Bank.

[25] Economic and Social Commission for Asia and the Pacific (2009), "Sustainable Agriculture and Food Security in Asia and the Pacific".

[26] Faye, I., Deininger, K. (2006), "Do new delivery systems improve extension access? Evidence from rural Uganda", American Agricultural Economics Association Annual Meeting.

50 per cent for research).[27] Evidence indicates that agricultural extension is also a pro-poor public investment. For instance, in Ethiopia, a single agricultural extension visit reduced poverty by 9.8 per cent and increased consumption by 7.1 per cent,[28] while extension visits in Uganda reduced poverty, child stunting and underweight children below the age of 5.[29]

31. Extension services have been evolving over time. In the 1990s and 2000s, Governments and development partners have begun reforming traditional extension services to address their major weaknesses.[30] Several African countries are already implementing some form of demand-driven extension models. These reforms aim to provide extension services that are:

- More demand-driven and participatory;
- Pluralistic in the providers of advisory services and in sources of funding;
- Targeted at vulnerable groups and empowering farmers to demand and manage advisory services;
- More focused, with the type of technology provided dependent on demand; but also
- More limited in services coverage.[31]

32. There is no one-size-fits-all extension service model and there is still room for improvement. Participatory approaches have been shown to perform better than top-down approaches. Yet, supply-driven extension services still play an important role.[32] For instance, sustainable land management practices may not be demanded by farmers, due to limited knowledge about their effectiveness.[33] It is important to include this training in extension services as well as post-production services, such as price and marketing information and strategies, which are often still lacking. In addition, extension services could be improved by taking advantage of farmers' indigenous knowledge.

33. Government financial support for extension services is often weak, such that services are largely donor-funded, which jeopardizes their longevity. Investment in agriculture needs to revitalize public extension services to complement non-governmental organizations and private providers' services that tend to operate

---

[27] Alston, J. M., Pardey, P. G. (2000), Attribution and other problems in assessing the returns to agricultural R&D, *Agricultural Economics*, 25, pp. 141-152.

[28] Dercon, S., et al. (2008), The Impact of Agricultural Extension and Roads on Poverty and Consumption Growth in Fifteen Ethiopian Villages, International Food Policy Research Institute discussion paper 00840.

[29] Nkonya, E., Benin, S., Okecho, G. (2009), "Enhancing the use of improved agricultural technologies", International Food Policy Research Institute (mimeo).

[30] Röling, N. (2006), "Conceptual and methodological development in innovation", Innovation Africa Symposium, Kampala; Rivera, W., Alex, G. (2004). Decentralized Systems: Case studies of international initiatives. Agricultural and Rural Development discussion paper 8 (1), World Bank.

[31] Nkonya, E. (2009), "Current extension service models, what works and what does not work. United Nations expert group meeting on sustainable land management and agricultural practices in Africa", University of Gothenburg.

[32] Rivera, W. (2001), "Agricultural and rural extension worldwide: options for institutional reform in the developing countries", FAO.

[33] Qamar (2006).

in areas with high market access.[34] Coverage has to be expanded in remote areas and among poor farmers, especially women, where most information is needed. Extension services must also take into account socio-economic conditions and focus on locally available resources. Training farmers to use high-input practices in areas where inputs are prohibitively expensive will fail as demonstrated in farmer field schools in Kenya.[35]

IV. Boosting agriculture sustainably

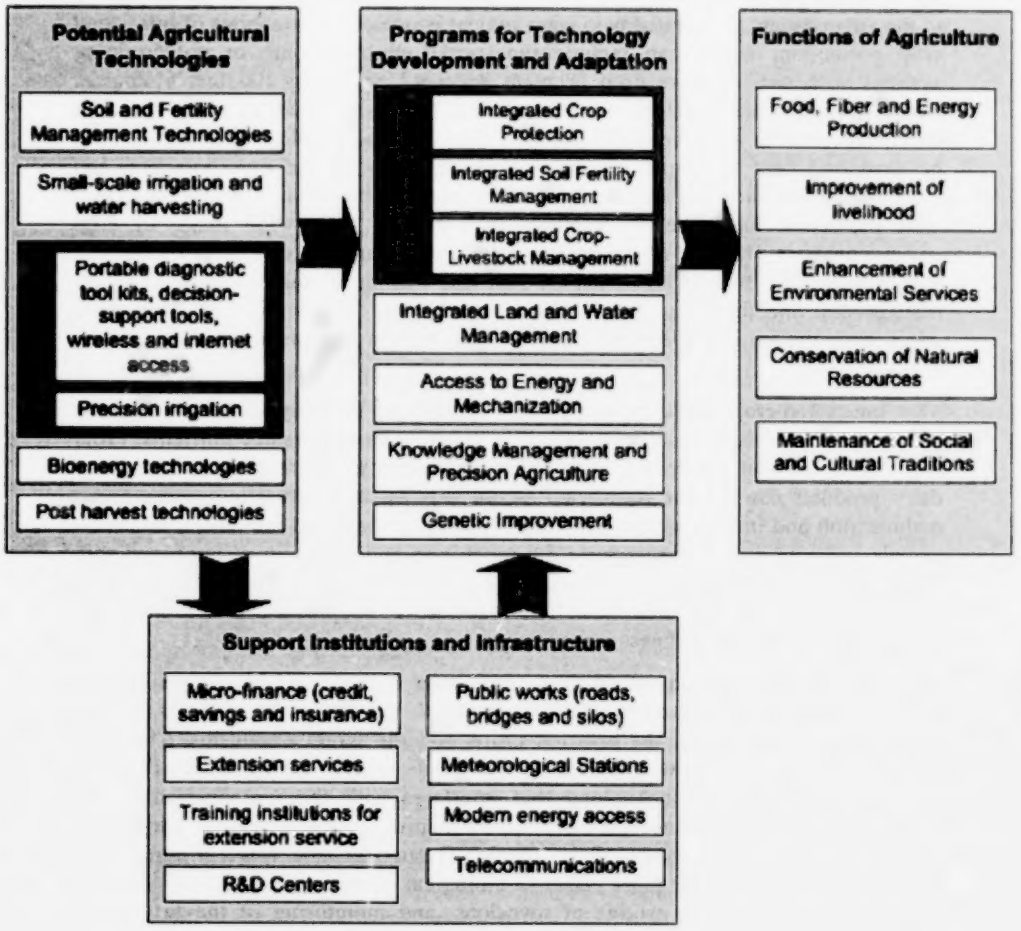
34. While various technologies are available to achieve food security and eradicate poverty, they need to be deployed through a coherent framework, in proper combinations, and with the necessary support from appropriate institutions and infrastructure (figure 2), especially in more complex and diversified smallholder farming systems. Programmes appropriate in the context of developing countries can be grouped as follows:

- Dynamic-integrated agricultural production, which includes integrated crop protection, integrated soil fertility management and integrated crop-livestock management;
- Integrated land and water resource management, with emphasis on community-based land and water management;
- Access to energy and mechanization;
- Knowledge management and precision agriculture; and
- Genetic improvement.

[34] Rutatora, D., Mattee, A. (2001), "Major agricultural extension providers in Tanzania", *African Study Monograph*, 22, pp. 155-173.

[35] Muli, M. B., et al. (undated), "Enhancing local innovation process", Kenya Agricultural Research Institute.

Figure 2
Potential technologies and programmes needed to bolster the functions of agriculture



A. Programmes for technology development and adaptation

Dynamic-integrated agricultural production

35. Dynamic-integrated agricultural production involves multiple farming systems (crop and livestock) that interact in space and time. It is dynamic in the sense that it includes an annual strategy of optimizing production, economic and resource conservation goals.[36] Dynamic-integrated agriculture encompasses the principles of integrated crop protection and integrated soil-fertility management.

[36] Hendrickson, J., et al. (2008), "Principles of integrated agricultural systems: introduction to process and definition", *Renewable Agriculture and Systems*, 23, pp. 265-271.

36. Integrated crop protection involves a holistic approach to the proper management of pests, weeds and diseases. It views the agroecosystem as an interrelated whole and utilizes a variety of physical, chemical, biological, cultural and genetic approaches to control pests, weeds and diseases with limited disruption to the environment. Integrated pest management is one of the strategies of integrated crop protection, which can include the use of multicropping or polycropping systems with two or more crop or plant species,[37] or using classical biological control by introducing natural enemies against pests and weeds,[38] while avoiding the introduction of invasive alien species. Natural forms of biological control should be exploited first to minimize concerns associated with the environmental and health effects of chemical and physical forms of crop protection.[39] While integrated crop protection has been successfully implemented in a wide range of crop environments in all parts of the world, its adoption remains slow.[40] For example, smallholders in sub-Saharan Africa are still less willing to embrace integrated pest management and there has been limited success with its adoption in staple food crops, even though it is widely advocated as the main crop-protection strategy in the region.

37. Integrated crop and livestock systems, if managed properly, can contribute to a balanced use of natural resources, including water, soils and organic nutrients. From a human nutritional standpoint, even modest increases in consumption of meat and dairy products can deliver significant health benefits by addressing micronutrient malnutrition and improving the nutritional quality of diets that are largely based on cereals and root crops. Research on the promotion and diffusion of improved soil, water and crop-management technologies should be increased. Farm schools could help to bridge the research and field experience to provide location-specific integrated soil fertility and pest management.

38. For farmers that can afford them, molecular biology and biotechnology can support integrated crop protection programmes through improvements to the biological control agents, the affected crops and the target organisms. This also includes genetic pest control based on the sterile insect technique, which is an environment-friendly biotechnology that interferes with the reproduction of the target pests.[41] These technologies depend on gaining greater scientific knowledge on the concerned populations of the species through genetic fingerprinting. This enables direct searches for more effective biological control agents, identification of agent specimens, tracing origins of invasions, and monitoring of the safety and efficacy of integrated crop protection programmes.[42] Thus far, there is limited research on the needs of developing countries with respect to this technology.

39. Integrated soil fertility management is increasingly accepted in developing countries, particularly by smallholders. The objective of integrated soil fertility

---

[37] Bale, J. S., et al. (2008), Biological control and sustainable food production. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363, pp. 761-776.

[38] Orr, A. (2003), "Integrated pest management for resource-poor African farmers: is the emperor naked?" *World Development*, 31, pp. 831-845.

[39] Rector, B. (2008), "Molecular biology approaches to control intractable weeds: new strategies and complements to existing biological practices", *Plant Science*, 175, pp. 437-448.

[40] Bale et al. (2008).

[41] Dyck, V. A., et al. (eds.) (2005), *Sterile Insect Technique, Principles and Practice in Area-wide Integrated Pest Management*, Netherlands: Springer.

[42] Rector (2008).

management is to integrate the use of all natural and man-made sources of plant nutrients in order to achieve greater crop productivity in an environmentally sustainable manner. It employs various strategies, including appropriate nutrient application, crop-livestock integration, soil conservation and knowledge transfer of integrated soil fertility management practices to various concerned stakeholders.[43]

40. Applying established nutrient application and soil-conservation technologies is essential in maximizing the plant uptake of nutrients and the prevention of physical loss of soil and nutrients. These include alteration of the field's physical environment, use of biological nitrogen fixation, use of intercropping, and application of manure and mulch.[44] Particularly promising are crops that combine soil nitrogen fixing qualities and human nutritional and/or market values, which are cultivated by poor smallholders and women farmers (e.g., cowpea, promiscuous soybean and dolicos lablab). Dynamic-integrated agricultural production implies taking advantage of the ubiquitous nutrient sources from all agricultural systems, particularly from livestock. Integrated crop-livestock management would facilitate the use of agricultural residuals as feed for animals, while the animal waste products are used to make compost. There are successful cases in Asia and Africa where greater crop productivity was achieved with the use of compost in smallholder farms.[45]

Integrated land and water resource management

41. The core principles of integrated land and water resource management focus on the integration of planning approaches that incorporate both conventional and non-conventional strategies to close the gap between land and water supply and demand. It includes the principles of sustainable development, multi-stakeholder participation and the role of women.[46] The effective implementation of integrated land and water resource management depends on, among others, the nature and intensity of water problems, availability of human resources, characteristics and capacities of institutions, cultural setting and biophysical conditions unique to individual countries.[47]

42. Besides low rainfall, water scarcity in developing countries can result from a shortfall in economic resources and incentives to develop water-related infrastructure. In the case of African smallholders in the semi-arid and arid areas, for example, living at great distances from bodies of water proves to be severely restrictive for agricultural development. Diverting water to these remote areas entails massive engineering projects (i.e., large-scale irrigation systems) that would require enormous amounts of capital.[48] Hence, integrated land and water resource management suggests smaller-scale water infrastructure (e.g., small-scale irrigation

---

[43] Gruhn, P., et al. (2000), "Integrated nutrient management, soil fertility, and sustainable agriculture: current issues and future challenges", Food, Agriculture and the Environment discussion paper 32. International Food Policy Research Institute.

[44] Ibid.

[45] Ching, L. L. (2009), "Is ecological agriculture productive?" Briefing paper 52. Third World Network; also, Sustainable Development Innovation Brief 7, United Nations, Department of Economic and Social Affairs, Division for Sustainable Development.

[46] Global Water Partnership, (2000), "Integrated water resource management".

[47] Funke, N., et al. (2007), "IWRM in developing countries: lessons from the Mhlatuze Catchment in South Africa", *Physics Chemistry Earth*, 32, pp. 1237-1245.

[48] Van Koppen, B. (2003), "Water reform in Sub-Saharan Africa: what is the difference?" *Physics Chemistry Earth*, 28, pp. 1047-1053.

and rainwater harvesting), water conservation, and soil moisture management, as well as community-level water management as economically viable alternatives to addressing water scarcity.[49]

43. Development of rural water resources necessitates the use of low-cost and efficient water technologies that are relatively simple to maintain and that can be constructed and operated at the community-level.[50] An example of a low-cost water harvesting technology is the sand dams that have been extensively tested in several African countries.[51] Low-pressure drip irrigation is another low-cost technology that is currently advocated in developing countries. Such a technology can achieve water savings of more than 50 per cent relative to conventional surface irrigation systems.[52] The Government of Israel, as part of its Techno-agricultural Innovation for Poverty Alleviation programme, is currently working with local institutions and various development organizations to dispatch low-pressure drip irrigation systems in Africa.[53] Of course, increased irrigation efficiency does not alleviate the need to manage the aggregate use of water at the water basin level to ensure sustainability of the resource.

Access to energy and mechanization

44. Mechanization of agriculture holds great potential to increase production. This necessitates a shift from traditional energy (manual labour and use of draft animals) to modern energy. Yet reliance on expensive fossil fuels may be self-defeating in time of rapid increase in world prices. Instead affordable forms of energy such as biomass (including biofuels and biogas from crop residuals and livestock waste), solar, wind and small hydro maybe more sustainable.

45. Renewable energy technologies that have promise in the agricultural sectors of developing countries, particularly in Africa, include small hydro, modern bioenergy and solar dryers. Co-generation using agricultural residuals, such as bagasse, is a well-established technology in Africa.[54] Locally produced biofuels for local energy generation have also shown significant productivity gain.[55]

Knowledge management and precision agriculture

46. Information and communication technologies are now becoming an essential tool for facilitating knowledge management and bolstering agricultural development.[56] The vast distance between many rural communities and centres of

[49] International Assessment of Agricultural Science and Technology for Development (2009).

[50] Lasage, R., et al. (2008), "Potential for community-based adaptation to droughts: sand dams in Kitui, Kenya", *Physics Chemistry Earth*, 33, pp. 67-73.

[51] Lasage (2008).

[52] Maisiri, N., et al. (2005), "On-farm evaluation of the effect of low-cost drip irrigation on water and crop productivity compared to conventional surface irrigation system", *Physics Chemistry Earth*, 30, pp. 783-791.

[53] Israel resolution on agricultural technology for development.

[54] Karekezi, S. (2002), "Renewables in Africa — meeting the energy needs of the poor", *Energy Policy*, 30, pp. 1059-1069.

[55] Karlsson, G., Banda, K. (2009), "Biofuels for sustainable rural development and empowerment of women", Case studies from Africa and Asia, *Energia*.

[56] Rao, N. H. (2007), "A framework for implementing information and communication technologies in agricultural development in India", *Tech Forecasting Social Change*, 74, pp. 491-518.

commerce, finance and governance prohibits an efficient transfer of information. Developing countries lack the transportation infrastructure, financial resources and time needed to make it convenient for rural inhabitants to access information and relevant services. Mobile and wireless technologies have proved to be promising solutions for bolstering administrative efficiency and reducing transaction costs. Information and communication technologies is able to provide farmers with real-time information on the latest market forecasts, weather forecasts, emergency alerts, agricultural technologies, expert consulting, banking transactions, funding opportunities and Government/private notifications.[57]

47. Information and communication technologies is useful in organizing and analysing relevant information on nutrient dynamics and making it available for farmers. Decision support includes computer models and interactive-Internet-based systems, with remote sensing, yield mapping and crop canopy measurements that can be used for more efficient targeted fertilizer applications. For instance, information and communication technologies has made national-level rapid assessments of land fertility, biodiversity[58] and nutrient dynamics[59] relatively easy.

48. Precision agriculture gathers comprehensive data on spatial and temporal production variability and fine-scale application of soil and livestock factors. Precision agriculture allows for efficient utilization of agricultural inputs, early warning of ill health, and even reduction in pollutant emissions.[60] While high technology precision agriculture is now debuting in large-scale systems in developing countries, its application for smallholders still remains a challenge. Precision agriculture is not only limited to sophisticated technologies, such as global positioning satellites and remote sensing. It includes low-cost and simpler technologies (e.g., portable diagnostic tool kits, such as chlorophyll meter and leaf colour charts), decision support systems and even traditional knowledge.[61] It can also include integrated systems for recording of animal identification, to enhance disease monitoring, genetic selection, production monitoring and product traceability.

49. Improved application of information and communication technology (ICT) for agricultural development requires new strategies and partnerships. Public-private partnerships and ICT have a critical role in enhancing the dissemination of technical information through programmes such as Research for Life (www.research4life.org). Potentially the most significant impact of ICT on agricultural technology generation will be in connecting and engaging communities in participatory agricultural innovation. Improving the understanding and

---

[57] Ntaliani, M., Costopoulou, C., Karetsos, S. (2008), "Mobile government: a challenge for agriculture", *Government Information Quarterly*, 25, pp. 699-716.

[58] Gillison, A. (2006), "Bridging the gap between research and farmers", Presentation at United Nations expert group meeting on sustainable land management and agricultural practices in Africa, University of Gothenburg.

[59] Goulding, K., et al. (2008), "Optimizing nutrient management for farm systems", *Philosophical Transactions of the Royal Society B: Biological Sciences*, 363, pp. 667-680.

[60] Wathes, C. M., et al. (2008), "Is precision livestock farming an engineer's daydream or nightmare, an animal's friend or foe, and a farmer's panacea or pitfall?" *Computers and Electronics in Agriculture*, 64, pp. 2-10.

[61] Mondal, P., Basu, M. (2009), "Adoption of precision agriculture technologies in India and in some developing countries: scope, present status and strategies", *Progress in Natural Science*, 19, pp. 659-666.

appropriate application of ICT in agricultural development, regardless of geographic boundaries, necessitates support to local, regional and global communities of practice, such as the e-agriculture community, in order to have the best impact.[62]

Genetic improvement

50. Biotechnology, according to the Convention on Biological Diversity, should ideally include much of the traditional knowledge and technologies for the production, processing and preservation of agricultural products, as well as modern molecular tools. It can have a role to play in bolstering agricultural productivity and fostering rural development and sustainability. A proven and uncontroversial technology with demonstrated capacity to broaden crop adaptability to adverse environments and enhance efficiency of nutrient and water uptake is mutation induction applied to plant breeding. An alternative technology is that of transgenics (genetically modified organisms), which needs to be closely managed to avoid risk of contamination of non-biotech fields.[63] Bioengineering crops have, with a few exceptions, so far focused on developing seeds for plants that are resistant to pests or to specific herbicides and focused on high-valued crops.

51. For livestock, programmes of genetic improvement in local breeds include conventional (record keeping, genetic evaluation, artificial insemination), as well as advanced methods (molecular genetics and genomics), and generally aim to improve productivity while maintaining genetic diversity and adaptability. Thus far, they have been applied to enhance the growth, health and survivability of animals, particularly in terms of resistance to pathogens and diseases.[64] Genomics could lead to great production increases but has been criticized on the basis of risk factors. More generally, the role and value of genetic modification continues to be vigorously debated in both scientific and policy communities. If pursued, such programmes need to be accompanied by appropriate biosafety analysis and screening to ensure that any environmental and human health risks are monitored and minimized. The programmes should also be complemented with programmes on animal identification and recording to establish associations between genotypes and phenotypes in the local environments.

52. Furthermore, genetic improvement must be recognized as only one component of an integrated approach to enhancing productivity of crops and livestock. Less controversial genetic improvement techniques are readily available, such as selection within and between breeds and crossbreeding.[65]

53. Part of the controversy over bioengineering is that patents protecting agricultural biotechnologies are mostly held by a few multinationals and protected under the World Trade Organization (WTO) Trade-Related Aspects of Intellectual Property Rights. The small number of competitors, combined with intellectual

---

[62] Maru, A., et al. (2009), "Information and Communication Technologies — Ways to Mobilize and Transform Agricultural Science for Development", Consultative Group on International Agricultural Research Science Forum.

[63] International Assessment of Agricultural Science and Technology for Development (2009).

[64] Laible, G. (2009), "Enhancing livestock through genetic engineering — recent advances and future prospects", *Comparative Immunology, Microbiology and Infectious Diseases*, 32, pp. 123-137.

[65] Kosgey, I. S., Okeyo, A. M. (2007), "Genetic improvement of small ruminants in low-input, smallholder production systems: technical and infrastructural issues", *Small Ruminant Research*, 70, pp. 76-88.

property rights, tends to raise the cost of seeds and relevant technologies, thus potentially limiting smallholders' access.[66] For that reason, the International Seed Treaty has established a Multilateral System of free access and benefit sharing of certain plant genetic resources.[67] Research on orphan crops and crops modified to adapt to climate change should be developed under the Multilateral System to ensure plant breeders and farmers have access to the resulting technologies. Alternatively, intellectual property rights holders could be encouraged to provide developing country users with technologies for a limited period, with the expectation of receiving payment once the technology has been adapted to local requirements.

B. Support institutions and infrastructure

54. Several types of support institutions and infrastructure are necessary for the implementation of technology development and adaptation programmes. Microfinance institutions may offer savings, credit and insurance services that enhance the ability of the rural poor to take on risks. For instance, microinsurance is a means by which to buffer the risks posed by adverse weather conditions that threaten smallholders.[68] Another important institution is the extension service provider, which offers knowledge and information that can improve farmers' income and welfare.[69]

55. Farmers' education is another important factor that needs to be addressed by support institutions. A farmer with four years of elementary education is, on average, 8.7 per cent more productive than a farmer with no education. Thus, the provision of more and better basic education in rural areas is essential. The perceived negative image of agriculture must also be changed to reverse the current declining enrolment in agricultural education.[70] Agricultural education and training have to be brought back to the mainstream education system. Its isolation has led to curricula irrelevance, falling teaching and learning standards, unemployment of graduates, and decreasing investment support.[71]

56. There is a direct link between provision of infrastructure and rural development. The rural poor need access to basic public works, agricultural infrastructure, modern energy, water and telecommunications. These types of

---

[66] Lalitha, N. (2004), "Diffusion of agricultural biotechnology and intellectual property rights: emerging issues in India", *Ecological Economics*, 49, pp. 187-198; Walker, S. (2001), "The TRIPS agreement, sustainable development and the public interest: discussion paper", International Union for the Conservation of Nature, Gland.

[67] FAO (2001). Report of the Thirty-First Session, appendix D: International Treaty on Plant Genetic Resources for Food and Agriculture, 2 to 13 November 2001, C/2001/REP.

[68] Zeller, M., Sharma, M. (2000), "Many borrow, more save, and all insure: implications for food and micro-finance policy", *Food Policy*, 25, pp. 143-167; Bryla, E., Syroka, J. (2007), "Developing index-based insurance for agriculture in developing countries", Innovation Briefs, Issue 2, United Nations, Department of Economic and Social Affairs, Division for Sustainable Development.

[69] Anderson, J., Feder, F. (2003), "Rural extension services", World Bank policy research working paper No. 2976.

[70] Pratley, J. E., Leigh, R. (2008), "Agriculture in decline at Australian Universities", Fourteenth Australian Society of Agronomy Conference, Adelaide.

[71] Gasperini, L. (2000), "From agricultural education to education for rural development and food security: all for education and food for all".

infrastructure are able to lower costs by reducing post-harvest losses and allowing farmers to have a more efficient means of delivering crops and acquiring products and services over long distances.[72]

C. Local adaptation and community involvement

57. Technology adaptation programmes would be more likely to achieve their objectives if new technologies were grounded in local context and stakeholders' priorities. Local communities have indigenous knowledge that can facilitate technology adaptation, and hence should be given the opportunity to participate in the planning and management of programmes and the assessment of the local applicability of agricultural technologies. In addition, farmer organizations and cooperatives assist farmers to do more with limited resources, obtain lower input and higher output prices, pool outputs to reduce transportation costs, and even develop local processing capacity.

58. Local adaptation will increasingly have to consider the impact of climate change on agriculture. Climate change projections are characterized by pronounced variability and uncertainty.[73] Even as there is a drive for greater predictability of climate models, response strategies need to account for uncertainties when building resilience in agricultural systems.[74] Besides research into adapted crop varieties, adaptive approaches also need to be integrated into management practices.

V. Summary of recommendations

59. **The development and deployment of technologies, which is critical for realizing the goals of agricultural development, food security, poverty eradication, ecological sustainability, and climate resilience, requires a strategic framework of action, which a number of policy processes have begun to sketch but this is an evolving agenda. The latest and most refined version is set out in the decision agreed at the seventeenth session of the Commission on Sustainable Development, which shapes the policy recommendations which follow.**

60. **The approach combines complementary actions at national level and supportive actions at international level.**

National Actions

61. **Agricultural technology and broader development should be incorporated into national sustainable development strategies. Besides the core strategy for a green revolution, the decision calls for related strategies to protect scarce natural resources, including an integrated strategy for sustainable management of land and water resources, strategies for addressing drought and**

[72] Hemson, D., et al. (2004), "Rural development: the provision of basic infrastructure services", Integrated Rural and Regional Development, Human Sciences Research Council.

[73] Giorgi, F. (2005), "Interdecadal variability of regional climate change: implications for the development of regional climate change scenarios", *Meteorology Atmospheric Physics*, 89, pp. 1-15.

[74] Howden, S. M., et al. (2007), "Adapting agriculture to climate change", *Proceedings of the National Academy of Sciences*, 104, pp. 19691-19696.

desertification and for adapting to climate change, and improved monitoring as basis for measures to reverse land degradation.

62. **Sustainable green revolution: The Commission on Sustainable Development, at its seventeenth session, calls for a green revolution that revitalizes agricultural sectors in developing countries by enhancing agricultural production, productivity, and sustainability through the use of science-based approaches and local indigenous knowledge in a manner that protects and conserves natural resources, limits the use of scarce inputs and pollutants, and enhances the quality of natural resources. Key elements of the strategy are:**

(a) **Increased investment in agriculture, agricultural research and development and critical rural infrastructure;**

(b) **Building the knowledge and information base for effective technology development and deployment, including through effective use of information and communications technologies;**

(c) **Investment in extension services that effectively place scientific knowledge in the hands of farmers and communities, as well as in farmers' education and training to be able to make effective use of that knowledge in combination with traditional knowledge;**

(d) **Promoting use of efficient and cost-effective technologies for the implementation of sustainable land management;**

(e) **Support for national and international market integration, particularly for small farmers and local entrepreneurs;**

(f) **Investment in improved post-harvest technologies and infrastructures to reduce wastage along the food chain, including for improving food handling, testing, processing, storage and transport;**

(g) **Special programme for Africa: the green revolution in the 1960s and 1970s largely bypassed Africa. The Commission, at its seventeenth session, seeks to ensure that this time the continent would benefit from the latest scientific research and that these benefits would not come at the cost of ecological services, cultural arrangements, and indigenous knowledge, and that African agriculture has the capacity to cope with and adapt to climate change.**

63. **Addressing climate change: The Commission, at its seventeenth session, calls for mobilization of funding for research and development of drought-tolerant seed varieties, the promotion of technical solutions and practices in combination with traditional knowledge for drought forecasting, impact assessment, and early warning systems. It also asks for investment in agriculture as a way of addressing climate change.**

64. **Social strategy for sustainable rural development, including:**

(a) **Enhanced support for small farmers, providing incentives to resource poor farmers for acquiring suitable technologies and adopting sustainable practices;**

(b) **Land tenure protection as well as secure access to water, especially for poor and vulnerable groups;**

(c) **Empowerment of rural women, who play a critical role in agricultural production and ensuring household food security, including through land tenure protection. Extension services should be better targeted at smallholders, especially women farmers, and more women need to be trained as extension agents;**

(d) **Social capital and scaling up of best practice: The Commission on Sustainable Development, at its seventeenth session, recognizes the fact that a number of "best practices" have failed to be deployed at significant scale. These include, for example, measures for soil and water conservation, efficient irrigation and water harvesting and storage, integrated water and land resources management, decreasing post-harvest losses, integrated pest management, and benefiting from market opportunities.**

65. **International cooperation will be essential to implement these national actions. The Commission on Sustainable Development, at its seventeenth session, highlighted the importance of mobilizing additional financial resources for agricultural official development assistance and, in particular, to support a green revolution in Africa. Smallholders everywhere also need to have greater protection from both price shocks and weather shocks, including those which may arise from climate change. International support for research and development on orphan crops, improved local livestock breeds and climate-adapted varieties and methods will be critical if African countries and other poor and vulnerable countries are to be able to enhance food security. Greater technology cooperation in the agricultural domain, North-South, South-South and triangular, could help to accelerate technology transfer and deployment where urgently needed. Technologies for effective water conservation and management and efficient irrigation constitute an important example of where there has been some progress, but more technology cooperation is needed broadly in the area of sustainable agriculture and natural resource management. International cooperation is also needed to work towards a consensus on sustainable biofuels.**

United Nations A/64/259

General Assembly

Distr.: General
7 August 2009

Original: English

Sixty-fourth session
Item 55 of the provisional agenda*
Sustainable development

Oil slick on Lebanese shores

Report of the Secretary-General**

Summary

The present report, submitted in response to the request contained in General Assembly resolution 63/211, provides an update on the progress of the implementation of Assembly resolutions 61/194, 62/188 and 63/211 related to the oil slick on Lebanese shores that resulted from the bombing of el Jiyeh power plant, a civilian utility serving the general public. It complements the information presented in previous reports of the Secretary-General on the oil slick on Lebanese shores (A/62/343 and A/63/225).

* A/64/150.
** The submission of the report was delayed four days to allow for further internal consultations.

09-45041 (E) 280809

Please recycle

I. Introduction

1. The present report, prepared by a United Nations inter-agency team, has been submitted pursuant to General Assembly resolution 63/211, by which the Assembly requested the Secretary-General to submit to it at its sixty-fourth session a report on the implementation of the resolution under the item entitled "Sustainable development".

2. The report provides updates to the information presented in the previous reports of the Secretary-General (A/62/343 and A/63/225), which constitute an integral part of the present report, which covers:

(a) Overall assessment of implications of the oil spill for livelihoods and the economy of Lebanon, owing to the adverse implications for natural resources, biodiversity, fisheries and tourism, and for human health in the country (chapter II);

(b) Progress made in approaching the Government of Israel on the assumption of responsibility for prompt and adequate compensation to the Government of Lebanon (chapter III);

(c) Overview of the progress made in cleaning up and rehabilitation operations with a view to preserving the ecosystem of Lebanon and that of the Eastern Mediterranean Basin (chapter IV);

(d) Progress made in the establishment of the Eastern Mediterranean Oil Spill Restoration Trust Fund and mobilization of sufficient and adequate resources (chapter V).

II. Implications of the oil spill for livelihoods and the economy of Lebanon, owing to the adverse implications for natural resources, biodiversity, fisheries and tourism, and for human health in the country

3. The marine oil spill resulted in the release of about 15,000 tons of fuel oil into the Mediterranean Sea, leading to the contamination of about 150 km of coastline in Lebanon and the Syrian Arab Republic. In paragraph 2 of its resolution 63/211, the General Assembly reiterates the expression of its deep concern about the adverse implications of the destruction by the Israeli Air Force of the oil storage tanks in the direct vicinity of the Lebanese el Jiyeh electric power plant for the achievement of sustainable development in Lebanon, and in paragraph 3, it considers that the oil slick has heavily polluted the shores of Lebanon and partially polluted Syrian shores and consequently has had serious implications for livelihoods and the economy of Lebanon, owing to the adverse implications for natural resources, biodiversity, fisheries and tourism, and for human health, in the country.

4. Several United Nations and other international entities, including the Food and Agriculture Organization of the United Nations (FAO), the International Union for Conservation of Nature (IUCN), the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP) and the World Bank, were involved in assessing the implications of the oil spill for human health, biodiversity, fisheries and tourism in Lebanon. The reports of those entities, together with those of the Government of Lebanon and UNEP/Mediterranean Action

Plan/Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea, provided a prompt and reasonably comprehensive account of the immediate impact and response. A summary of the combined findings was presented to the General Assembly at its sixty-second session (see A/62/343) and its sixty-third session (see A/63/225), under the triple headings of:

(a) Social (public health and safety);

(b) Economic (clean-up and monitoring, lost economic opportunities);

(c) Environmental (ecological and physico-chemical impacts).

5. There have been no further studies during the past year, except for the following two studies:

(a) With financing from the Government of Spain, through the Spanish Agency for International Cooperation and Development, in coordination with the Ministry of the Environment of Lebanon and under its technical supervision, a general bio-monitoring survey was conducted in Palm Island Nature Reserve and preliminary results documented some impact of oil spill on sea birds. The survey stated that mortality was not significant; however, some sea birds were found contaminated by oil. The Government-appointed Committee of the Palm Island Nature Reserve reported that gulls and cormorants were cleaned and released.

(b) With financing from the Canadian International Development Agency through UNDP, in coordination with the Ministry of the Environment of Lebanon and under its technical supervision, a survey conducted by a Greek environmental engineering consultancy firm thoroughly covered an area encompassing a shoreline length of approximately 210 km (from Tyre to the northern border of Lebanon) over a period of two months starting from November 2008. Preliminary results indicated that:

(i) Twelve sites still needed to be cleaned; most of those sites were not readily accessible by land;

(ii) Many sites were still stained by the oil spill but should be left for weathering and natural effects rather than active intervention for clean-up by humans;

(iii) Ten sites (from Tyre to the northern border of Lebanon) were selected for the underwater field survey according to criteria set by the Ministry of the Environment of Lebanon and the Greek consultancy firm. None of the underwater surveys conducted in the 10 sites revealed any underwater contamination with heavy fuel oil with the exception of Jbeil-Byblos beach, where a large number of tarballs were found, but no compact layer of fuel was discovered by digging into the sandy bottom of the area.

III. Progress made in approaching the Government of Israel on the assumption of responsibility for prompt and adequate compensation to the Government of Lebanon

6. In paragraph 4 of its resolution 63/211, the General Assembly requests the Government of Israel to assume responsibility for prompt and adequate compensation to the Government of Lebanon and other countries directly affected

by the oil slick, such as the Syrian Arab Republic whose shores have been partially polluted, for the costs of repairing the environmental damage caused by the destruction, including the restoration of the marine environment. This echoed the previous request made in paragraph 3 of Assembly resolution 61/194 and paragraph 4 of resolution 62/188.

7. To date, the Government of Israel has yet to assume its responsibility for prompt and adequate compensation to the Government of Lebanon. The reaction of the Government of Israel to Assembly resolution 61/194 was formally sought by a letter from the UNEP Post-Conflict and Disaster Management Branch to the Permanent Mission of Israel to the United Nations Office at Geneva, dated 16 August 2007, to which no response was received. A further letter, dated 5 June 2008, was sent from the Executive Director of UNEP to the Permanent Representative of Israel to UNEP, highlighting the renewed request for action on the part of Israel contained within Assembly resolution 62/188. The response received from the Government of Israel on 10 September 2008 (see annex 1) did not commit to any action towards putting into effect paragraph 3 of resolution 61/194 and paragraph 4 of resolution 62/188; and no response has been received from the Government of Israel in the light of the request in Assembly resolution 63/211, paragraph 4.

8. In 2007, UNDP reviewed the many conventions that relate to oil pollution at sea, which many eastern Mediterranean countries have signed, as well as other possible agreements or compensation schemes. Unfortunately, all conventions are inapplicable during armed hostilities. Additionally, the agreements that relate to spill compensation[1] pertain only to oil spills from tanker vessels at sea, and not land-based incidents. In 2007, UNDP recommended examination of the United Nations Compensation Commission as the only precedent-setting major oil-spill compensation regime for spills arising from armed hostilities.[2]

9. All littoral States of the eastern Mediterranean are signatory to the only oil spill response convention that relates to cooperation in response to spills arising from coastal oil-handling facilities and not merely from tankers, the International Convention on Oil Pollution Preparedness, Response and Cooperation, 1990, which entered into force in 1995 and which is aimed at facilitating international cooperation and mutual assistance between States and regions. The spirit of the Convention clearly could not be fully observed during the hostilities of July 2006 and in the aftermath of the marine oil spill.

10. Although not specifically concerned with spill compensation issues or non-accidental acts during war hostilities, that Convention could nevertheless be utilized for future capacity-building and regional cooperation in the area of spill

[1] The International Convention on Civil Liability for Oil Pollution Damage, 1969, and the 1992 Protocol thereto; the 1992 Protocol to the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (International Oil Pollution Compensation Fund); and the 2003 Protocol on the Establishment of a Supplementary Fund for Oil Pollution Damage (Supplementary Fund Protocol).

[2] By its resolution 687 (1991), the Security Council created an indemnification fund for damages and harm caused following the invasion of Kuwait. As a result, millions of dollars were disbursed as compensation for lost revenues during the recession in Kuwait. For the first time, paying indemnities for damaging the environment and destroying natural resources was expressly allowed.

planning. Israel, Lebanon and the Syrian Arab Republic should be strongly encouraged to take a leadership role in a thorough post-spill review of convention-related activities in the eastern Mediterranean Sea, hosted by the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea. Other regional signatories of the Convention that could have been affected by the spill, including via aerial transfer combustion products, are Egypt, Greece, Jordan and Turkey.

11. The Barcelona Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean also sets out, in article 9, the following obligations of the parties to cooperate in dealing with pollution emergencies:

> The Contracting Parties shall cooperate in taking the necessary measures for dealing with pollution emergencies in the Mediterranean Sea area, whatever the causes of such emergencies, and reducing or eliminating damage resulting therefrom;
>
> Any Contracting Party which becomes aware of any pollution emergency in the Mediterranean Sea area shall without delay notify the Organization and, either through the Organization or directly, any Contracting Party likely to be affected by such emergency.

12. The Government of Lebanon notified the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea of the oil spill by a letter dated 21 July 2006.

13. As cited in the report of the Secretary-General (A/62/343), a range of recovery measures to respond to the Lebanon oil spill have been suggested as a positive step towards biodiversity conservation and restoration of livelihood in the region.

IV. Progress made in the provision of financial and technical assistance in support of the efforts of the Government of Lebanon to complete the clean-up and rehabilitation operations, with the aim of preserving the ecosystem of Lebanon and that of the Eastern Mediterranean Basin

14. In paragraph 5 of its resolution 63/211, the General Assembly encourages Member States, regional and international organizations, regional and international financial institutions, non-governmental organizations and the private sector to continue their financial and technical support to the Government of Lebanon towards achieving the completion of clean-up and rehabilitation operations, with the aim of preserving the ecosystem of Lebanon and that of the Eastern Mediterranean Basin.

15. When the oil spill occurred in July 2006, it overwhelmed national response capacity because of the ongoing conflict, the simultaneous need for a massive humanitarian response, the destruction of infrastructure and a land, air and sea blockade by Israel. Those factors also impeded initial efforts for international assistance. During the conflict, the Ministry of the Environment of Lebanon mobilized resources with its partners in the international community. It also coordinated preventive interventions, such as the construction of barriers to protect industry and the coastline from further spillage. After the end of the conflict, some international assistance was provided and clean-up operations started.

A. Clean up

16. The Ministry of the Environment of Lebanon implemented a two-phase clean-up plan as and when materials and resources were provided by the various bilateral partners and international organizations, as described in its commemorative reports of July 2007 and September 2008.[3]

17. During the first phase, the priorities set by the Ministry of the Environment were to recover free-floating oil from the sea and confined areas; clean areas with potential for direct human contact or risk to public health; rehabilitate areas where oil slicks hampered economic activities; and address direct threats to environmentally or culturally important sites. This not only followed the three-part approach to sustainable development (social, economic and environmental) but was also consistent with best practices in protection and clean-up prioritization. Phase I was completed in February 2007, in partnership with various Member States and organizations, including the Government of Italy, the Fund for International Development of the Organization of Petroleum Exporting Countries (OPEC), UNDP, the Swiss Agency for Development and Cooperation, the Canadian International Development Agency, the United States Agency for International Development, as well as local non-governmental organizations.

18. Following the completion of phase I, between April and May 2007 the Ministry of the Environment conducted a survey of the Lebanese coast to determine the scope of work for phase II, which focused primarily on the removal of fuel from rocks, wave cut platforms, cliffs and infrastructure. An underwater survey of the near-shore and littoral zones of the coast between the northern zone (Abdeh-Akkar) and the southern zone (Jadra) was carried out by the Ministry and financed by UNDP.

19. Clean-up work followed, sponsored by the Government of Japan through UNDP,[4] the Government of Norway through the Higher Relief Commission in

---

[3] The Ministry of the Environment of Lebanon commemorated the second anniversary of the oil spill disaster in order to strengthen environmental awareness of its severe impacts and to foster partnerships between institutions from different sectors as well as showcase the latest developments. This second international commemorative event, held at the Lebanese University under the theme "Two years on — Oil Spill Crisis in Lebanon, July 2006-2008: So that we shall not forget" was attended by approximately 150 participants. It targeted national media organizations, oil spill partners (public entities, private national and international companies, national organizations and non-governmental organizations, international organizations (the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), the World Bank, the Food and Agriculture Organization of the United Nations (FAO)), other development partners (embassies, the Centre de Documentation de Recherche et d'Experimentations sur les pollutions accidentelles des eaux and the Spanish Agency for International Cooperation and Development), the general public, the local community, academics (faculty and students), and others. It included the production and dissemination of the second memorial booklet that listed events with regard to the oil spill over the past two years, in addition to the launching of the website http://www.moe.gov.lb/OilSpill2006 and the presentation of experience gained by partners of the Ministry, as well as an exhibition in which all partners involved had the chance to present their work.

[4] Clean-up operations in areas surrounding Dalieh fishermen's wharf in Beirut and el Jiyeh — four lots (September-November 2007), under the technical supervision of the Ministry of the Environment of Lebanon.

Lebanon,[5] USAID[6] and the Government of Spain through the Spanish Agency for International Cooperation and Development,[7] as part of phase II activities which should be completed by summer 2009.

20. A comprehensive oil spill shoreline survey from Tyre to the northern border of Lebanon was undertaken between November and December 2008, with funding from the Canadian International Development Agency through UNDP in coordination with the Ministry of the Environment of Lebanon and under its technical supervision. The findings are anticipated to be published by September 2009. Minor and pre-final clean-up activities at about 12 sites, with a total length of approximately 7.3 km, will be initiated by the Ministry of the Environment. The 12 sites are as follows:

(a) One rocky site in south Beirut (500 m);

(b) Six rocky sites in north Beirut (2,850 m);

(c) Five sites around Beirut (3,950 m), which included:

(i) Three riprap sites;

(ii) One few rock and riprap site;

(iii) One concrete wall site.

B. Waste management

21. As of June 2008, approximately 500 cubic metres of liquid and 3,120 cubic metres of semi-solid and solid waste had been collected during both phases of clean-up operations and all had been appropriately stored in containers in secure temporary storage sites, with contribution from all partners, particularly the Government of Japan and the Canadian International Development Agency both through UNDP in coordination with the Ministry of the Environment of Lebanon and under its technical supervision.

22. Upon the request of the Government of Lebanon, two studies were undertaken on the treatment and disposal options in respect of oil-spill waste. The first, entitled "Assessment and review of oil spill clean-up waste and review of possible treatment options", was funded by UNDP and published in July 2007. The second, entitled "Study for the management of oily wastes generated by the cleaning operations of the Lebanese coast following the oil spill of el Jiyeh", which was published in

[5] On 1 November 2007, a memorandum of understanding was signed between the Government of Norway and the Government of Lebanon, under which clean-up operations took place in six areas in north and south Beirut under the technical supervision of the Ministry of the Environment of Lebanon (December 2007-February 2008).

[6] On 3 August 2007, a memorandum of understanding was signed between the Government of the United States of America, represented by the United States Agency for International Development, and the Government of Lebanon, under which clean-up operations took place in 21 areas between Tabarja and Anfeh under the technical supervision of the Ministry of the Environment of Lebanon (September 2007-May 2008).

[7] On 18 October 2007, a memorandum of understanding was signed between the Government of Spain, through the Spanish Agency for International Cooperation and Development, and the Government of Lebanon, under which clean-up operations took place on Palm Islands Nature Reserve (May 2008-June 2009).

December 2007, was funded by the Ministry of Finance and Industry of France and implemented in coordination with the Council for Development and Reconstruction in Lebanon, and a French independent engineering and environmental consulting firm as well as the Centre de Documentation de Recherche et d'Experimentations sur les pollutions accidentelles des eaux. Both studies highlight the fact that Lebanon currently lacks the infrastructure for the environmentally sound treatment of such waste. Based on these findings, the Ministry of the Environment of Lebanon designed a brief project proposal on sound environmental waste management, including a waste schematic diagram.

23. With funding from the Canadian International Development Agency and the Government of Japan through UNDP and in coordination with the Ministry of the Environment of Lebanon and under its technical supervision, oil-spill clean-up wastes which were still on shore in el Jiyeh area and surrounding areas (about 645 cubic metres) were transported to safe temporary storage sites (el Jiyeh power plant for solid wastes and Zouk power plant for liquid wastes) in the last quarter of 2008. Coupled with complementary initiatives by the Ministry of the Environment of Lebanon and the United States Agency for International Development, an intervention allowed the removal of all oil-spill-recovered wastes from the entire shoreline north of Beirut.

24. In parallel, with funding from the Canadian International Development Agency through UNDP, in coordination with the Ministry of the Environment of Lebanon and under its technical supervision, as well as in conjunction with other public and private partners, treatment was initiated at two of the temporary storage sites, and is expected to be completed in the third quarter of 2009:

(a) Zahrani refinery (about 310 cubic metres of polluted sand and pebbles, debris and equipment), where treatment started in January 2009 with the polluted sand and pebbles;

(b) A plot of land close to the coastline of Beirut Central District made available by a private Lebanese company, where about 2,000 cubic metres of polluted sand will be stabilized using quicklime; this is still at the research/testing phase.

25. Together these two activities will set a model for treatment by the Ministry of the Environment of Lebanon and its partners, for the remaining wastes (about 2,500 cubic metres) stored at the refinery in Tripoli and the el Jiyeh and Zouk power plants (liquid and residues).

26. Limited funding has been provided so far; co-funding is still needed to achieve the objectives entailed. The Government of Norway, through its embassy in Lebanon, in its letter dated 24 September 2008 informed the Ministry of the Environment of Lebanon that the oil spill waste management project would be financed from the budget for the year 2009 of the Norwegian Ministry of Foreign Affairs. The Ministry of the Environment of Lebanon has submitted a full project application and is working closely with the Government of Norway to put the project into effect.

C. Environmental monitoring

27. In the light of the international meeting convened in Athens on 17 August 2006 by the International Maritime Organization (IMO) and UNEP, hosted by the Government of Greece, which reached agreement on the Action Plan prepared by the Experts Working Group for Lebanon under the supervision of the Regional Marine Pollution Emergency Centre and the Minister for the Environment of Lebanon, and given the fact that the General Assembly, in paragraph 4 of its resolution 61/194, encouraged Member States, regional and international organizations, regional and international financial institutions, and non-governmental organizations and the private sector to provide financial and technical assistance to the Government of Lebanon in support of its efforts to clean up the polluted shores and sea of Lebanon with a view to preserving its ecosystem, the Government of Greece allocated $1.6 million for the implementation of an environmental monitoring project in Lebanon.

D. Overall cost and assistance

28. Assistance for phase I is estimated at almost $15 million (mostly in the form of equipment and technical assistance (see annex 2)). This is according to table 2.24 of the World Bank report published in 2007;[8] however, this assistance is currently overestimated at around $18.5 million.

29. The aforementioned equipment was deposited by the Ministry of the Environment of Lebanon with the relevant public administrations responsible for responding to a national emergency, such as the oil spill, through tripartite decision 61/1 dated 29/10/2008 signed between the Ministry of the Environment, the Ministry of National Defense and the Ministry of Interior and Municipalities. The objective of this decision is to put that equipment to good effect and to leverage its value.

30. It should be noted that the Ministry of the Environment estimated the cost of the clean-up at $150 million, based on an applied model of costs per ton spilled, while the Experts Working Group for Lebanon estimated the overall cost of clean-up and rehabilitation at between $137 million and $205 million. The Experts Working Group for Lebanon recommended that range as an upper limit, with $68 million[9] as the minimum value. The Working Group therefore proposed that the search for funding be based on an initial amount of $68 million for 2006, with possible complements for 2007.[10] The total assistance received by Lebanon as of June 2008 was therefore around 10 per cent of the average upper limit range, and only about

---

[8] World Bank, *Republic of Lebanon: Economic assessment of environmental degradation due to July 2006 hostilities*, report No. 39787-LB (Washington, D.C., 2007).

[9] Converted from euros, the currency used by the Experts Working Group for Lebanon, at a rate of 1 euro = $1.36 (the United Nations rate on 21 May 2009).

[10] Experts Working Group for Lebanon, Lebanon Marine and Coastal Oil Pollution International Assistance Action Plan, 25 August 2006. Members of the Experts Working Group for Lebanon include the Joint Environment Unit of UNEP and the Office for the Coordination of Humanitarian Affairs, the European Commission Monitoring and Information Centre, the International Tanker Owners Pollution Federation Ltd., UNDP, Instituto Centrale per la Ricerca Scientifica e Tecnologica Applicata al Mare, the Oceanography Centre, University of Cyprus, and Centre de Documentation de Recherche et d'Experimentations sur les pollutions accidentelles des eaux.

37 per cent of the minimum value. Furthermore, the lower estimate of $68 million arrived at by the Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea was based substantially on the cost of just one major Mediterranean spill (Haven, 1991), which had similarities with, but also some significant differences from, the spill in Lebanon.

V. Progress made in the establishment of the Eastern Mediterranean Oil Spill Restoration Trust Fund, based on voluntary contributions and mobilization of sufficient and adequate resources

31. In paragraph 6 of its resolution 63/211, the General Assembly decides to establish an Eastern Mediterranean Oil Spill Restoration Trust Fund, based on voluntary contributions, to provide assistance and support to the States directly adversely affected in their integrated environmentally sound management, from clean-up to safe disposal of oily waste, of this environmental disaster resulting from the destruction of the oil storage tanks at el Jiyeh electric power plant, and requests the Secretary-General to implement this decision before the end of the sixty-third session of the General Assembly.

32. In paragraph 7 of its resolution 63/211, the General Assembly invites States, intergovernmental organizations, non-governmental organizations and the private sector to make voluntary financial contributions to the Trust Fund, and, in this regard, requests the Secretary-General to mobilize international technical and financial assistance in order to ensure that the Trust Fund has sufficient and adequate resources.

33. UNEP is taking steps to facilitate the establishment of the Trust Fund and will report on progress in due course.

34. Furthermore, the United Nations Economic and Social Commission for Western Asia (ESCWA) has expressed its readiness to host the Eastern Mediterranean Oil Spill Restoration Trust Fund, by stating that in principle, ESCWA is in the position to manage a trust fund and the basic United Nations rules for the establishment and management of trust funds apply also in the case of ESCWA. Additionally the standard office procedures are in place for the receipt and recording of voluntary contributions for ESCWA trust funds.

VI. Conclusions

35. The Secretary-General wishes to commend the ongoing efforts made by the Government of Lebanon to address the impact of the oil spill and to urge the Government of Israel to take the necessary actions towards assuming responsibility for prompt and adequate compensation to the Government of Lebanon. The Secretary-General would also like to commend the efforts made by the United Nations system in responding to the emergency and thereafter to the requests of the Government of Lebanon pertaining to the management of the oil spill crisis. While the response of the international donor community has been both generous and timely given the particularities of the cause and the circumstances prevailing at the time of the oil spill incident and after, the Secretary-General would urge Member

States, international organizations, international and regional financial institutions, non-governmental organizations and the private sector to continue their support for Lebanon in this matter, particularly for rehabilitation activities on the Lebanese coast, as well as in the broader recovery effort. The international effort should be intensified, since Lebanon is still engaged in oil removal, waste treatment and recovery monitoring. It should also be recognized that the oil spill is not covered by any of the international oil-spill compensation funds, and thus merits special consideration. Towards this end, the Secretary-General is currently finalizing the mechanism under which the Eastern Mediterranean Oil Spill Restoration Fund will operate.

Annex I

Letter dated 10 December 2008 from the Permanent Representative of Israel addressed to the Executive Director of the United Nations Environment Programme

Dear Mr. Steiner,

First, allow me to apologize for the delay of our response to your letter, dated 5 June 2008. I wish to take this opportunity to reiterate our position:

Israel is committed to protecting the environment both nationally and regionally and shares UNEP's concern for the environment. May we also stress that Israel is an active participant in the Barcelona Convention for the Protection of the Mediterranean Sea and is working together with all parties to the convention to promote its aims.

As you are well aware, the 2006 conflict, which erupted between Israel and Lebanon, had severe implications on the people of this region as well as the environment on both sides of the border. Please bear in mind that it was not Israel which initiated the violence, but rather reacted to an aggressive unprovoked action against it, and thus the conflict came to be.

During the confrontations, following the oil spill, Israel responded to requests by REMPEC for assistance and issue permissions for the aerial photographic flights requested by international agencies.

Following the conflict, the Post-Conflict Assessment Branch of UNEP conducted a report on the state of the environment in Lebanon. In the report, there is a long list of findings and recommendations following the work of the team, whose professionalism we highly respect. Its findings include, for example, the following (p. 166-167):

- "The concentrations of PAH in seabed sediment and in molluscs beyond the immediate vicinity of the power plant were similar to what is expected in coastal areas under the influence of urban zones, industry and transport, with the spill adding marginally to these background concentrations."
- "The levels of petroleum hydrocarbons in the tissue of oysters beyond the immediate vicinity of the power plant were in the expected range of concentrations for areas under anthropogenic influence."
- "The concentrations of petroleum hydrocarbons in the samples of fish tissue were found to be below or slightly above the detection limit. No difference was detected between the petroleum hydrocarbons concentrations in fish from different areas or in species from different tropic levels."

In our view, facts presented by the Post-Conflict Environmental Assessment Branch itself illustrate a situation, which is substantially different from that implied by the decisions of the General Assembly regarding the Oil Slick on Lebanese Shores (A/RES/61/194 and A/RES/62/188).

The General Assembly decisions stipulates as follows: "The oil slick has heavily polluted the shores of Lebanon and has consequently serious implications for human health biodiversity and fisheries and tourism ..." and "oil slick has

heavily polluted the shores of Lebanon and partially polluted Syrian shores and consequently has had serious implications for livelihoods and the economy of Lebanon, owing to the adverse implications for natural resources, biodiversity, fisheries and tourism, and for human health, in the country."

The assessment clearly states that although there was environmental damage that occurred due to the fighting in the area, it was limited in scope and had relatively limited long-term effects.

We have full confidence in the professionalism of UNEP's staff and that it will continue as in the past, to promote attention to environmental issues. We regard UNEP's forward looking reports as a basis for continued cooperation between Israel and the organization.

(*Signed*) Jacob **Keidar**
Ambassador
Permanent Representative

Annex 2

Member States, regional and international organizations, regional and international financial institutions, governmental and non-governmental organizations and private sector entities that had provided financial and technical assistance to the Government of Lebanon as at 24 June 2008

	Cash contributions	*Technical assistance*[a]	*Equipment*[b]	*Contractors*[c]
Member States				
First response during the war				
Kuwait		■	■	
European Union/Danish Emergency Management Agency		■		
Norway		■	■	
Post-war assistance				
Norway	▨	■	■	
Canada (Canadian International Development Agency)				■▨
Cyprus			■	
Finland			■	
France		■	■	
Germany		■		
Italy		■	■	
Monaco			■	
Spain[d]		■	■	▨
Sweden		■		
Switzerland (Swiss Agency for Development and Cooperation)				■
Japan				■
United States (United States Agency for International Development)				■▨

	Cash contributions	*Technical assistance*[a]	*Equipment*[b]	*Contractors*[c]
Regional organizations				
League of Arab States/Egypt		■		
International organizations				
United Nations Development Programme	■			
World Bank		■		
United Nations Environment Programme, Post-Conflict Branch, and Office for the Coordination of Humanitarian Affairs		■		
Food and Agriculture Organization of the United Nations		■		
Regional financial institutions				
Organization of the Petroleum Exporting Countries (Fund for International Development)	■			
International financial institutions				
None				
International non-governmental organizations				
International Union for Conservation of Nature — West Africa, Central Asia and North Africa office and Mediterranean offices		■		
Greenpeace		■		
International private sector				
Recoverit International, Australia				▨

[a] Transfer of technical know-how by experienced personnel for activities related to oil-spill recognition, evaluation and control activities.

[b] Hardware and software (consumables) for the purpose of oil-spill recognition, evaluation and control activities.

[c] Contractors are third parties contracted to undertake oil-spill recognition, evaluation and control activities and are directly subcontracted by development partners.

[d] Phase II work funded by the Government of Spain was carried out through the Spanish Agency for International Cooperation and Development.

■ Phase I development partner.

▨ Phase II development partner.

United Nations A/64/260

General Assembly

Distr.: General
6 August 2009

Original: English

Sixty-fourth session
Item 56 of the provisional agenda*
Implementation of the outcome of the United Nations Conference on Human Settlements (Habitat II) and strengthening of the United Nations Human Settlements Programme (UN-Habitat)

Implementation of the outcome of the United Nations Conference on Human Settlements (Habitat II) and strengthening of the United Nations Human Settlements Programme (UN-Habitat)

Report of the Secretary-General

Summary

The present report is submitted pursuant to paragraph 15 of General Assembly resolution 63/221. It describes the activities of the United Nations Human Settlements Programme (UN-Habitat) over the past year in implementing the outcome of the United Nations Conference on Human Settlements (Habitat II) and progress made in the institutional strengthening of the Programme.

It also identifies achievements and challenges, and charts the way forward towards achieving sustainable urban development in an increasingly urbanizing world. The report provides an overview of the outcome of the twenty-second session of the Governing Council of UN-Habitat and of the results of follow-up support to the implementation of the Habitat Agenda. In addition to approving the work programme and budget of UN-Habitat for the biennium 2010-2011, the Council took stock of the progress made in the implementation of the medium-term strategic and institutional plan as the key means of strengthening the Programme. The Council adopted guidelines on access to basic services for all and called for follow-up to be closely coordinated with the implementation of the guidelines on decentralization and the strengthening of local authorities adopted at its twenty-first session.

* A/64/150.

09-44714 (E) 280809

Please recycle

An important outcome of the twenty-second session of the Governing Council were the recommendations emerging from the dialogue on affordable housing finance systems in the face of the global economic and financial crisis and climate change. As follow-up to those recommendations, the Council recommended to the General Assembly that it consider the question of convening in 2016 a third United Nations conference on housing and sustainable urban development.

The report also contains a review of progress made in the implementation of the Habitat Agenda at the global, regional and national levels, including the World Urban Forum and the recently established regional ministerial meetings on housing and urban development in Africa, Asia and the Pacific, and Latin America and the Caribbean. In addition, it provides an overview of cooperation with agencies and organizations of the United Nations system and with non-governmental organizations. Some observations on the organization's financial and budgetary matters are followed by overall conclusions and recommendations for follow-up action.

I. Introduction

1. The present report is submitted pursuant to General Assembly resolution 63/221, entitled "Implementation of the outcome of the United Nations Conference on Human Settlements (Habitat II) and strengthening of the United Nations Human Settlements Programme (UN-Habitat)".

II. Outcome of the twenty-second session of the Governing Council of the United Nations Human Settlements Programme

2. The twenty-second session of the Governing Council of the United Nations Human Settlements Programme (UN-Habitat) was held in Nairobi from 30 March to 3 April 2009 with the special theme "Promoting affordable housing finance systems in an urbanizing world in the face of the global financial crisis and climate change".

3. In addition to approving the work programme and budget of UN-Habitat for the biennium 2010-2011 and reviewing progress made in the implementation of the medium-term strategic and institutional plan for the period 2008-2013, the Governing Council focused on the following issues: (a) affordable housing finance systems in the face of the global economic and financial crisis and climate change; (b) strengthening the development of urban youth; (c) access to basic services for all; (d) South-South cooperation in human settlements; (e) the World Urban Forum; and (f) the governance structure of UN-Habitat.

4. The impact and consequences both of the global economic and financial crisis and of climate change have introduced new challenges and dimensions to the underlying rationale of the Habitat Agenda[1] and have brought on a new sense of urgency in the modalities of its implementation. In the face of rapid urbanization, the local or national human settlements agenda and the global environmental agenda are converging, with cities at the nexus of climate change adaptation and mitigation.

5. As a result, the Governing Council, in its resolution 22/1, recommended to the General Assembly that it consider the question of convening in 2016 a third United Nations conference on housing and sustainable urban development, so as to review, update and adopt more relevant policy recommendations to address the issues of sustainable human settlements development in a rapidly urbanizing world.

A. Affordable housing finance

6. The short-term implications and long-term impact of the current financial and economic crisis for low-income housing and infrastructure finance were the subject of formal dialogue sessions during the twenty-second session of the Governing Council. Experts concurred that the global financial crisis had been brought about in large part by poorly regulated mortgage finance systems and unscrupulous approaches to low-income housing. A key lesson learned was that Governments should realize that the housing sector was far too important to the health of the

[1] *Report of the United Nations Conference on Human Settlements (Habitat II), Istanbul, 3-14 June 1996* (United Nations publication, Sales No. E.97.IV.6), chap. I, resolution 1, annex II.

overall economy to be left to market forces alone. This, in turn, pointed to the need for Governments to adopt proactive housing policies that catered to the needs of the poor and low-income groups, and to put in place appropriate regulatory frameworks capable of preventing unbridled speculative and predatory housing financing practices.

7. Another key lesson learned was that the economic crisis had rendered the urban poor even more vulnerable than they already were. Access to decent housing and basic urban services has become the key determinant to improving health, education, gender equality and poverty reduction for the majority of the urban population in developing countries. The current crisis thus creates, more than ever before, the need for Governments to accord high priority to affordable housing and accessible urban services as key policy measures and means of attaining the internationally agreed development goals, including the Millennium Development Goals.

8. Speakers emphasized the critical role of the public sector in facilitating sustainable urbanization through supportive policies and legislation, priority budget allocations to infrastructure development and well-designed, targeted subsidies for the poor to access basic services. It was also generally recognized that the financial crisis called for innovative approaches that encouraged the involvement and leveraging of resources of all stakeholders, including international donors and agencies, private sector developers, financial and banking institutions and non-governmental and community-based organizations.

9. A recurring theme in the discussions was the difficulty of mobilizing finance at all levels, from Governments wishing to undertake slum upgrading and infrastructure development to the urban poor wanting to upgrade their housing. A range of solutions was offered, including the creation of a stable political environment to encourage long-term funding, the inclusion of housing as a priority in poverty reduction strategies, the setting up of housing funds, the adoption of complementary fiscal measures and the establishment of a new legislative and regulatory framework to support microfinance and help the poor to gain access to credit and obtain mortgages. On the supply side, new technical solutions were needed to make it easier to build low-cost housing.

10. In its resolution 22/2, the Governing Council invited all member States to consider undertaking a comprehensive assessment of the state of adequate shelter, affordable housing and related infrastructure with a view to assessing the adequacy of their national housing finance systems and regulatory frameworks in meeting the basic needs of the poor and disadvantaged segments of the population. The Council also encouraged all member States, including the regional ministerial conferences on housing and urban development, to establish sound and conducive frameworks and mechanisms to enable extended public and private investment in slum upgrading and prevention, affordable housing and urban development.

11. Also in resolution 22/2, the Governing Council requested the Executive Director of UN-Habitat to continue existing efforts, in close consultation with international and regional financial institutions, to disseminate models and knowledge about the importance of community-based pre-investment activities; to undertake appropriate monitoring and capacity-building in this regard, particularly at the municipal level; and to work with international and regional financial

institutions to promote appropriately scaled housing and infrastructure investments as a contributor to economic growth and as an important means of reducing poverty.

12. In addition, the Governing Council supported the efforts made in exploring the possibility of convening a high-level special event at the General Assembly on the issue of housing finance systems in the face of the global financial crisis. This special event should take into account, among other things, the recommendations emanating from the dialogue on affordable housing finance and climate change held at the Council's twenty-second session.

13. Member States were invited to contribute to the support and the replenishment of the UN-Habitat trust funds and other associated funds, including the experimental reimbursable seeding operations and the Slum Upgrading Facility, and programmes designed to extend assistance in the delivery of pro-poor affordable housing finance systems.

14. UN-Habitat subsequently organized a special meeting on affordable housing and housing finance in the face of the global financial crisis, as part of the Conference on the World Financial and Economic Crisis and Its Impact on Development held in New York from 24 to 26 June 2009. The meeting observed that the current financial crisis had its origins in overextended housing finance systems, in particular the so-called sub-prime mortgage instruments. While the crisis had exposed pervasive weaknesses in national and global financial systems and regulatory frameworks that needed to be urgently addressed, it also served as a potent reminder that housing was both a market product and a social good. Housing finance systems must be seen, in this context, both as a means of harnessing market forces to increase housing supply and as a means of fostering affordable housing and equitable urban development. In addressing the current economic situation and charting a path forward, human settlements must be at the forefront of sustainable development policy. There needed to be renewed commitment to the concept of sustainable human settlements; otherwise the challenges posed by the crisis would be exacerbated.

15. Presentations were made on the ongoing work of UN-Habitat to improve access to sustainable financing for affordable housing and infrastructure. That work involved promoting conducive policy frameworks, increasing financial institution activity in the sectors of affordable housing and infrastructure, creating effective local finance facilities for affordable housing, promoting community group access to finance and promoting local savings groups and savings instruments. The global financial crisis had heightened the need for financing to secure shelter and to stimulate economies affected by the crisis. The UN-Habitat experimental finance programme was modified to address the crisis through a tailored and effective approach. That included seeking out additional lending opportunities, at a scaled level, in Africa, Asia, Latin America and the Middle East; increasing partnerships with local, regional and international finance institutions; and deploying tools demonstrating the dual benefits of well-designed investments in affordable shelter. The importance of incorporating a gender perspective, a broad spectrum of insurance mechanisms and interest rates into affordable housing plans was reflected during the discussion.

B. Other partnership mechanisms and activities undertaken to attract investment in low-income housing and the supply of urban services

16. Relationships with the private sector saw a major shift in 2008 as a result of the launch of the medium-term strategic and institutional plan for the period 2008-2013. The concept moved beyond the realm of corporate social responsibility to include core business practices for sustainable urbanization. To this end, UN-Habitat enhanced its advocacy and knowledge management work and initiated new forms of partnership and cooperation at the global and country levels with, among others, international and domestic financial institutions, water utility companies and the real estate sector.

17. The first objective of such partnerships is pre-investment packaging, whereby policy reform, capacity-building and technical assistance efforts are designed to mobilize a mix of public expenditure and private investment in housing and urban development. The second objective is to show Governments and international and domestic financial institutions that business models for pro-poor housing and urban development are indeed viable and beneficial to overall economic development.

18. UN-Habitat advocacy and knowledge management work intensified under the Human Settlements Financing Tools and Best Practices Initiative. With a focus on systematically documenting asset-based approaches to community development, including cooperative approaches to housing development, social investment funds, urban community development funds, community-based housing finance initiatives and community mortgage programmes, the Initiative has strengthened research on the links between the economy and housing and between the economy and finance.

19. At the invitation of the Secretary-General, UN-Habitat launched the Global Water Operators' Partnerships Alliance, an international network of water operators, development agencies, civil society representatives and other stakeholders in the water and sanitation sector. The programme provides municipal water operators in Africa, Asia and Latin America and the Caribbean with a platform for exchanging strategies and applying best practices in the delivery of clean drinking water to informal settlements and slums.

20. With the support of the African Development Bank, the UN-Habitat Water for African Cities Programme is currently operational in 18 cities in 15 countries. The Bank's Zanzibar water and sanitation project has led to fast-track approval of loan agreements. In Kenya, considerable progress was made in assessing sanitation conditions in 26 communities in the Lake Victoria region. A recent agreement between UN-Habitat and the East African Community provides a framework for expanding collaboration in support of the Lake Victoria Region Water and Sanitation Initiative to another 15 towns in five countries, also in partnership with the African Development Bank.

21. A second memorandum of understanding was signed between UN-Habitat and the Asian Development Bank for the period 2007-2011. The memorandum envisions an additional $20 million in grant funds for raising awareness and building capacity to implement projects in preparation for follow-up investment in improving water and sanitation for Asian cities. The memorandum also reflects the Bank's commitment to invest $1 billion in the urban basic services sector with a focus on sanitation. Working in collaboration with the Bank, UN-Habitat is currently active

in 48 urban centres in China, India, the Lao People's Democratic Republic, Nepal, Pakistan and Viet Nam and will soon operate also in Indonesia. Additional funds were received in 2008 from the Government of the Netherlands for the Mekong Water and Sanitation Initiative. This initiative is being scaled up in Cambodia, the Lao People's Democratic Republic and Viet Nam.

22. During the reporting period, UN-Habitat entered into a strategic partnership with the Inter-American Development Bank. According to the memorandum of understanding signed in 2008, the Bank has a target of raising approvals of loans in the water and sanitation sector to around $1 billion. The memorandum enabled UN-Habitat to initiate a number of projects in Bolivia and Mexico in 2008.

23. Similarly, the Global Water Operators' Partnerships Alliance has mobilized a wide range of partners, including Cap-Net, the Google Foundation, the International Benchmarking Network for Water and Sanitation Utilities, the Abu Dhabi Water and Electricity Authority and the Advisory Board on Water and Sanitation of the Secretary-General, to strengthen learning and the exchange of good practices between and among water operators. The Abu Dhabi Water and Electricity Authority has agreed to establish a regional water and sanitation office within its offices in Abu Dhabi to host and further strengthen the Alliance secretariat.

24. Operational projects in the area of water and sanitation, housing and urban data management were also implemented with a number of private sector firms in partnership with the Global Housing Foundation and others.

25. In the area of public-private partnerships, UN-Habitat pursued joint activities with private sector companies to harness their capacity, know-how and technology in support of actions aimed at mitigating and adapting to climate change. Such partnerships were implemented in, inter alia, India, the Lao People's Democratic Republic and Nepal.

26. The first Habitat Business Forum was held in New Delhi in July 2009 as an outcome of the fourth session of the World Urban Forum, held in Nanjing, China, from 3 to 6 November 2008. The Forum was a joint effort of the Federation of Indian Chambers of Commerce and Industry and the China Real Estate Chamber of Commerce, under the patronage of the Government of India and co-sponsored by, inter alia, the Central Bank of India, the Building Materials and Technology Promotion Council of India, the National Housing Bank of India and the state governments of Rajasthan and Punjab. The Forum brought together leaders from the spheres of government, industry, professional associations and civil society on the theme of innovative cities. The Forum also recognized, through the Habitat Business Awards, five outstanding initiatives from the private sector in the areas of affordable land and housing, water and sanitation, the digital city, green technologies for cities, and disaster prevention, management and reconstruction.

Women's land and property rights and access to finance

27. Technical assistance and advisory services were provided to women's land access trusts in Ghana, Kenya, Uganda and the United Republic of Tanzania. Support was also provided for the formation of new land access trusts in Burundi, Ethiopia, Mozambique and Rwanda. Educational and peer-learning tours were organized for community leaders working with those new trusts. The experiences in Uganda and the United Republic of Tanzania show that a combination of credit

enhancements, community savings and technical assistance can make a significant difference in facilitating access to land and housing for the urban poor and for poor women in particular.

28. A gender equality action plan was prepared in consultation with a wide range of partners, experts and international and intergovernmental organizations. The plan was presented to and endorsed by the Governing Council of UN-Habitat at its twenty-second session. Fully compliant with the medium-term strategic and institutional plan for the period 2008-2013, the gender equality action plan will contribute to improving programme focus and alignment for coordination within and outside the United Nations system.

Improving land and property administration

29. At the seventeenth session of the Commission on Sustainable Development, UN-Habitat emphasized the need for the recognition of a range of land rights, strengthening of women's land and property rights, more effective coordination in the land sector, innovative land management, making land markets more effective and strong urban-rural linkages.

30. A set of gender evaluation criteria for large-scale land tools was launched jointly with partners during the twenty-second session of the Governing Council. The framework establishes how to judge whether a large-scale land tool or programme is sufficiently gender-responsive and equally beneficial to women and men. UN-Habitat, with the Huairou Commission and in collaboration with the International Federation of Surveyors, will pilot test the evaluation framework in 2009.

31. UN-Habitat continued to facilitate the Global Land Tool Network, a global network of more than 35 international organizations aimed at developing pro-poor and gendered land tools for securing land rights for all. Through the Network, a paradigm shift towards a pro-poor, innovative and gender-sensitive land agenda is now emerging at the global level, including the recognition of land governance concepts, strengthening of the social and technical dimensions of land and acceptance of a range of rights in providing security tenure for the poor. The Network is composed of international networks of professional groups, rural land institutions, civil society groups, training and educational institutions, other United Nations bodies and multilateral and bilateral organizations. An agreement was signed with the Central American Bank for Economic Integration to assist in and enhance innovative lending practices for affordable housing in the Central American subregion.

32. Close collaboration continued with the Pan African Land Policy Framework and Guidelines Initiative, which is being led by the African Union Commission, the Economic Commission for Africa and the African Development Bank, in collaboration with the regional economic communities, and other partners. The initiative aims to develop a framework and guidelines for land policy and land reform in Africa, with clear benchmarks and indicators for implementation. African Heads of State and Government recently adopted the Land Policy Framework and Guidelines during the thirteenth summit of the African Union, held in Sirte, Libyan Arab Jamahiriya, from 1 to 3 July 2009.

Innovative housing finance mechanisms

33. UN-Habitat continued to strengthen its catalytic role in facilitating cooperation between banks, local authorities and urban poor organizations to mobilize and package domestic capital, public investments and community savings for slum upgrading and affordable housing. Those efforts included the UN-Habitat Slum Upgrading Facility pilot programme operations in Ghana, Indonesia, Sri Lanka and the United Republic of Tanzania, where private sector loans are now an integral part of slum-dwellers' projects. These efforts were further strengthened by the launch of a number of innovative mechanisms, including the experimental reimbursable seeding operations. This facility will offer loans and credit enhancements through domestic financial institutions to stimulate private investment in housing and basic services provision to underserved populations.

34. The goal of the experimental reimbursable seeding operations is to develop innovative models to demonstrate how financing for affordable housing can be undertaken by combining the efforts of the private sector, microfinance and community organizations. By informing country policies and strategies, the lessons learned from the experiments have the potential to benefit millions of urban poor who currently lack access to formal credit facilities.

Innovative partnerships on urban safety and urban crime prevention

35. Urban safety is a key factor in enhancing local economic development and attracting both foreign and domestic investment. As part of its medium-term strategic and institutional plan, UN-Habitat in 2008 adopted a pre-investment capacity-building approach to promoting urban safety and crime prevention. This multidisciplinary approach seeks to leverage the resources and know-how of all stakeholders to improve the safety of urban spaces.

36. A safety and urban space tool network is being established and will link partner platforms supporting social investment in low-income and marginalized communities. The Police Platform for Urban Development, a collaborative effort with the Swedish National Police Board, is one example of how a platform of partners can provide support for democratic policing in urban areas, foster better involvement of communities in managing urban spaces and advance a culture of prevention in urban settings.

37. Similarly, the International Youth-led Urban Development Platform is engaging children and youth in low-income and marginalized communities as active partners in planning and decision-making in community safety and urban crime prevention. This approach typically leverages the resources of various social services, including those for safety, women, youth, the arts, culture and sports, to achieve tangible results in crime prevention in low-income neighbourhoods.

C. Cities and climate change

38. In order to facilitate greater coordination and a more concerted response to the challenges facing cities in relation to the mitigation of and adaptation to climate change, UN-Habitat established the Cities and Climate Change Initiative in parallel with the World Urban Campaign. The Initiative builds on the comparative advantages of UN-Habitat in working with local urban authorities and its expertise

in urban planning and management to support the efforts of all spheres of government to reduce the ecological footprint of cities while improving their safety and resilience to the effects of climate change.

39. The World Urban Campaign is a platform for member States and Habitat Agenda partners to disseminate policies and share practical tools for sustainable urbanization. The Campaign's objective is the implementation of more sustainable urban policies at the national level. For this reason, it focuses on providing Governments and partner networks with an advocacy instrument to articulate a shared vision for a better urban future and to advance the urban agenda within their respective constituencies.

40. The Campaign's advocacy instruments and working methodologies apply as much to organizations of the urban poor as they do to associations of local authorities, business forums, youth associations, media outlets, professional associations, women's groups, parliamentarians, ministerial conferences and intergovernmental bodies. The Campaign in this way seeks to position sustainable urbanization as a priority issue of the international community and as a national policy priority for individual member States.

41. Cognizant of the fact that cities are major contributors to greenhouse gas emissions and highly vulnerable to the effects of climate change, the Governing Council at its twenty-second session adopted two resolutions related to sustainable urbanization, one on cities and climate change and the other recommending the convening of a United Nations conference on housing and sustainable urban development in 2016. These resolutions will greatly boost the awareness of the contribution of the Habitat Agenda to the global climate change agenda and will further enhance a coordinated approach to their implementation.

42. Governments are urged to take concerted and coordinated action to include the issue of cities and climate change as an integral part of their national climate change strategies, including mitigation and adaptation measures, in view of continuing urbanization and the fact that over half of humankind lives in urban areas and is particularly vulnerable to the effects of climate change.

43. In sum, a global response is called for, involving partnerships with United Nations bodies and global networks of cities, professionals, civil society, young people, women and indigenous people. There is a need for more public information and increased awareness among young people and women, which can be achieved by using tools such as the Internet and through the arts, culture and sports. The need for greater investment in infrastructure and in research on new technologies and their application is also emphasized.

D. Review of the medium-term strategic and institutional plan for the period 2008-2013

44. Pursuant to General Assembly resolution 63/221 and the recommendations of the Governing Council at its twenty-first session, UN-Habitat prepared, in close consultation with the Committee of Permanent Representatives, an action plan for the implementation of the medium-term strategic and institutional plan for the period 2008-2013. The Committee had endorsed the action plan in December 2007

and progress reports on its implementation were submitted to the Committee throughout 2008.

45. The major outcomes included the development and approval of 33 UN-Habitat country programme documents as the first step in implementing the enhanced normative and operational framework at the country level, including in six of the eight "Delivering as One" pilot countries; the adoption of resource mobilization and branding strategies and the establishment of a resource mobilization unit to help consolidate and expand the donor base and mobilize non-conventional sources of funding and support; the formulation of policy and strategy papers for the medium-term strategic and institutional plan focus areas and of a results-based framework using SMART indicators, targets and priorities (i.e. those that are specific, measurable, achievable, relevant and time-bound); and new thresholds for delegation of authority and decentralization.

46. The adoption of a concerted approach to advocacy, partnerships and knowledge management was initiated under the World Urban Campaign. This approach was marked by the establishment of the new Cities and Climate Change Initiative and by the simultaneous launch of the *State of the World's Cities* report and the first regional report on cities in Africa at the fourth session of the World Urban Forum. This regional approach marked a new stage in advocacy and in the mainstreaming of the Habitat Agenda as part of the new World Urban Campaign.

47. Pursuant to a decision of the Governing Council at its twenty-first session, UN-Habitat launched an experimental initiative in the financing of pro-poor housing and urban development. The initiative is designed to show how it is possible to eliminate one of the largest barriers to urban poverty reduction by lowering the risks perceived by the domestic banking sector in providing housing finance for the urban poor on a sustainable basis.

48. A review of progress in the implementation of the medium-term strategic and institutional plan in mid-2009 highlighted some achievements and challenges and identified next steps. The achievements included a results framework that had improved the strategic focus and programme planning process of UN-Habitat. This framework is expected to provide an important basis for monitoring efficiency, effectiveness and accountability and, not least, for contributing to programme coherence.

49. The challenges identified included inadequate development of supportive business processes reflected in as-yet inadequate delegation of authority in financial and human resources areas; non-institutionalization of performance measurement, monitoring and reporting systems; difficulties in aligning the organizational structure approved by the General Assembly with the plan's focus areas; and the continuing imbalance between non-earmarked and earmarked funding and reliance on a small number of donors.

50. Suggested next steps included the clear allocation of roles, responsibilities and accountabilities tied to timelines; aligning of staff competencies with the plan's priorities; improvement of efficiency, transparency and delegation of authority; and a review of institutional governance. Particular attention would also have to be paid to results-based management capacity-building to sustain planning, monitoring, evaluation, reporting and improved accountability.

Urban youth development

51. The results of a survey on youth-led development initiatives and 200 peer-reviewed good practices in youth-led development from around the world were disseminated at the fourth session of the World Urban Forum. The Opportunities Fund for Urban Youth-led Development was launched on the same occasion. The Fund is designed to provide small grants to youth-led initiatives in skills development. The procedures and criteria to be used for approving support have been prepared and widely shared with Habitat Agenda partners interested in urban youth issues.

52. In recognition of the work of UN-Habitat in addressing the needs of youth living in urban slums and deprived neighbourhoods, the Governing Council of UN-Habitat at its twenty-second session called for a coordinated approach by relevant United Nations agencies, funds and programmes and other interested parties to support skills development initiatives for youth.

Access to basic services for all

53. Pursuant to resolution 21/4 of its Governing Council, UN-Habitat established a group comprised of experts and a wide range of stakeholders to solicit further input to the draft guidelines on access to basic services for all that had been presented to the Council at its twentieth session. Stakeholders included United Cities and Local Governments and representatives of Governments, public and private service providers and civil society organizations. Representatives from relevant United Nations bodies and regional and international financial institutions also participated actively in the work of the group. A series of regional consultations culminated with a global meeting held in conjunction with the fourth session of the World Urban Forum.

54. In its resolution 22/8, the Governing Council encouraged Governments and partners to provide institutional, technical and financial support to enable UN-Habitat to promote the implementation of the guidelines on access to basic services for all in complimentarity with the implementation of the guidelines on decentralization. It also encouraged Governments, according to their circumstances, to promote sustainable criteria in planning and construction while taking into account access to clean and safe drinking water, adequate sanitation, urban services, sustainable waste management and sustainable transport. It further requested the Executive Director of UN-Habitat, in close cooperation with member States and other relevant stakeholders, to prepare an assessment of the implementation and complementarity between the guidelines on decentralization and the guidelines on access to basic services and to report to the Council at its twenty-third session on the progress made in the implementation of the resolution.

Governance structure of UN-Habitat

55. In the spirit of General Assembly resolution 63/221, and in particular with regard to the need to strengthen institutional reform and the pursuit of management excellence, including results-based management, the Governing Council discussed the efficiency and effectiveness of the governance structure of UN-Habitat, as set out in document HSP/GC/22/2/Add.3.

56. In its resolution 22/5, the Governing Council requested the Executive Director and the Committee of Permanent Representatives to undertake jointly, within the work programme and budget, an examination of the governance of UN-Habitat with a view to identifying and implementing ways to improve the transparency, accountability, efficiency and effectiveness of the existing governance structure and to identify options for any other potential relevant changes for consideration by the Council at its twenty-third session.

III. Global and regional consultative processes

A. World Urban Forum

57. The fourth session of the World Urban Forum was held in Nanjing, China, from 3 to 6 November 2008, under the theme "Harmonious urbanization: the challenge of balanced territorial development". The theme was broken down into the following six sub-themes, which provided the main focus for the four-day session: "Territorial balance in urban development"; "Promoting social equity and inclusiveness"; "Making cities productive and equitable"; "Harmonizing the built and natural environments"; "Preserving the historical roots and soul of the city"; and "A city for all generations". The Council welcomed the offer of the Government of Brazil to act as host to the fifth session of the World Urban Forum, in Rio de Janeiro, to be held in March 2010. The theme of the fifth session would be "The right to the city: bridging the urban divide".

58. The quest for innovative ideas and practical solutions in respect of the theme and sub-themes was evident in the 6 dialogues, 8 round-table discussions and more than 140 networking events and seminars that took place in Nanjing. Ministers, mayors, academics, community-based organizations, professional associations, non-governmental organizations and members of the private sector shared insights and experiences on what would improve the quality of life in the world's growing cities. The inclusive approach adopted at the Forum and in the discussions among partners represents a model for the future development of cities. Lessons learned from the success of the Forum in mobilizing Habitat Agenda partners as well as new partners to engage in dialogue and the sharing of good policies and best practices have been incorporated in the strategy of the World Urban Campaign.

59. At its twenty-second session, the Governing Council, recognizing that the World Urban Forum had become the premier global event on housing and sustainable urban development issues, called for a certain number of measures to be taken so as to maintain the momentum of the Forum, to firmly anchor the Forum within the formal United Nations calendar of meetings and to strengthen the synergy between the outcomes of the Forum and the medium-term strategic and institutional plan.

B. Flagship reports

60. In both developed and developing countries, cities and towns are increasingly influenced by globalization and the effects of climate change. Both these mega-trends bring about significant economic, demographic and spatial changes that are reshaping towns and cities, both physically and socially. To document and

analyse those phenomena at a regional level, preparations are under way to produce the first regional report on the state of cities in Latin America and the Caribbean, in partnership with the Cities Alliance, ministries of housing and urbanism and the Latin American Federation of Cities, Municipalities and Associations (FLACMA). This publication is expected to be launched at the fifth Session of the World Urban Forum, in March 2010.

61. UN-Habitat has signed a partnership agreement with the Central American Council of Housing and Human Settlements (CCVAH) to assist in knowledge management to strengthen the exchange and transfer of best practices. At a meeting held in May 2009, a comprehensive subregional strategy was adopted to implement a joint initiative for low-income housing development, backed by the Central American Bank for Economic Integration.

62. Both flagship reports of UN-Habitat produced during the reporting period address these and other issues. The *State of the World's Cities Report 2008-2009: Harmonious cities*[2] in intended to enhance the understanding of the dynamics shaping the world's cities. The report includes (a) an analysis of the determinants of urban growth and decline and the consequences of asymmetrical regional development and rural-urban disparities; (b) an analysis of income and consumption inequality at the city level and degrees of shelter deprivation in various cities and how they adversely affect social and economic development; and (c) as part of the cities and climate change debate, the presentation of key data on energy consumption at the city and household levels and an analysis showing which cities and urban populations will be most at risk from rising sea levels.

63. *Planning Sustainable Cities: Global Report on Human Settlements 2009*, to be released in late 2009, reviews the major challenges facing cities and towns all over the world, the emergence and spread of modern urban planning and the effectiveness of current approaches. More importantly, the report identifies innovative urban planning approaches and practices that are more responsive to current and future challenges of sustainable urbanization.

64. As part of finding a new role for urban planning in sustainable urbanization, the report contains suggestions on a number of fundamental changes. Firstly, governments at both the central and local levels should increasingly take on a more central role in cities and towns. This, to a large extent, is in response to the current global economic crisis, which has exposed the limits of market mechanisms working alone. Secondly, a reformed urban planning approach will have to pay greater attention to small and medium-sized cities, especially in developing countries, where planning often focuses on larger cities. Thirdly, reformed urban planning systems must unequivocally address a number of major current and emerging urban challenges, especially climate change, rapid urbanization and its consequences of increasing urban poverty and informality, mega-urban regions, urban safety and post-disaster and post-conflict situations. Finally, capacity to enforce urban planning and development regulations, which is seriously lacking in many developing countries, should be given high priority and should be developed on the basis of realistic standards.

[2] United Nations publication, Sales No. E.08.III.Q.1.

C. Regional ministerial meetings

65. UN-Habitat assisted in the preparation of the substantive background documents for the second African Ministerial Conference on Housing and Urban Development, which was held in Abuja from 28 to 31 July 2008. The Conference theme was "Goal 7, target 11: overcoming the finance and resource challenges for sustainable housing and urban development". The Conference adopted the Abuja Resolution and an action plan providing guidelines on financing for housing, slum upgrading and urban development in general.

66. UN-Habitat also facilitated the deliberations of a working group on the delivery of the Millennium Development Goals on water and sanitation during the second Asia-Pacific Ministerial Conference on Housing and Urban Development, which was held in Tehran in May 2008 and led to the adoption of an action plan.

67. In addition, UN-Habitat assisted in the preparatory process and organization of the seventeenth Regional Meeting of Ministers and High-level Authorities of the Housing and Urban Development Sector in Latin America and the Caribbean (MINURVI) and the thirteenth Ibero-American Forum of Housing and Urban Development Ministers and High-level Authorities, held in El Salvador in September 2008.

D. South-South cooperation in human settlements

68. The Governing Council deliberated on the significant potential of South-South cooperation. In this context, the Council welcomed the criteria established for the country-level activities of UN-Habitat, including the deployment of UN-Habitat programme managers and the progress made in the elaboration of UN-Habitat country programme documents. It also requested UN-Habitat to make use of the experience, expertise and centres of excellence existing in several countries of the South to help in the implementation of its work programme. It further urged UN-Habitat to contribute to the report of the Secretary-General to the forthcoming United Nations conference on South-South cooperation and to participate in that conference, and to facilitate the organization of a dialogue on South-South cooperation at the next session of the World Urban Forum.

69. Governments and relevant organizations were urged to provide financial resources to UN-Habitat for the purpose of further facilitating South-South cooperation in achieving sustainable urban development through capacity-building, policy advice and promoting horizontal learning among developing countries in line with the focus areas of the medium-term strategic and institutional plan, including through the best practices database.

IV. Cooperation with agencies and organizations within the United Nations system, intergovernmental organizations outside the United Nations system and non-governmental organizations

70. A joint progress report of the executive directors of UN-Habitat and the United Nations Environment Programme was presented to the Governing Council outlining

areas of cooperation and coordination between the two bodies. This cooperation included development of a new partnership framework for the period 2008-2013 and a joint implementation plan focusing on cities and climate change, waste management and outreach activities.

71. Cooperation with the United Nations Development Programme in numerous country-level programme activities was underlined, as was full participation by UN-Habitat in six of the eight "Delivering as One" pilots to ensure alignment of country-level programming with national development priorities.

72. UN-Habitat cooperates with the International Labour Organization and other bodies in promoting decent work and full employment for poverty eradication. UN-Habitat has contributed to the draft United Nations system-wide plan of action for poverty eradication through full employment and decent work commissioned by the High-level Committee on Programmes. UN-Habitat also produced a self-assessment report on mainstreaming the goals of full and productive employment and decent work.

73. UN-Habitat continued its collaboration with the Office of the United Nations High Commissioner for Human Rights in the joint implementation of the United Nations Housing Rights Programme. The Programme made progress on the development of housing rights indicators and documentation of national housing rights legislation. Under the Programme, UN-Habitat collaborated with the Centre on Housing Rights and Evictions in producing the *Housing and ESC Rights Law Quarterly*, a widely used advocacy tool in the area of housing, economic, social and cultural rights.

74. UN-Habitat renewed the membership of the Advisory Group on Forced Evictions to the Executive Director of UN-Habitat. Members include experts from key Habitat Agenda partners, such as the Asian Coalition for Housing Rights, the Centre on Housing Rights and Evictions, Environment and Development Action: ENDA-Tiers Monde, the Habitat International Coalition, the International Alliance of Inhabitants and Slum Dwellers International. The Advisory Group co-organized, with the Institute for Housing and Urban Development Studies, the Centre on Housing Rights and Forced Evictions and the Huairou Commission, a training event on alternatives to forced eviction at the fourth session of the World Urban Forum. Fact-finding missions were undertaken to seven towns and cities in five countries in which large-scale forced evictions had been reported, and recommendations were addressed to UN-Habitat and other stakeholders for follow-up action.

75. UN-Habitat cooperated with the Permanent Forum on Indigenous Issues and contributed to the activities of the Inter-Agency Support Group on Indigenous Issues. UN-Habitat has spearheaded an urban policy guide initiative to add an urban component to the more generic guidelines on indigenous peoples developed by the United Nations Development Group task team for mainstreaming and integrating indigenous issues in United Nations operational activities. The initiative aims to provide guidance to policymakers, urban managers and practitioners on the needs and specific challenges of indigenous peoples living in urban areas. UN-Habitat launched its policy guide to housing for indigenous peoples at the eighth session of the Permanent Forum.

76. Cooperation with the United Nations Office on Drugs and Crime on issues of urban safety and crime prevention continued in the areas of monitoring and

advocacy, policy and institutional reform, pre-investment capacity-building and tools development. The tools developed included a joint assessment tool on crime prevention, victimization surveys, a handbook on the role of police and urban space and a handbook on sports as a tool for crime prevention, with an initial focus on Africa in preparation for the 2010 World Cup in South Africa.

77. Cooperation with the United Nations Development Fund for Women included the promotion of safe cities free of violence against women and girls as a means of mainstreaming gender equality at the local governance level with a view to achieving the goals and targets of Millennium Development Goal 3, on gender equality, and Millennium Development Goal 7, on environmental sustainability. UN-Habitat participated in the work of the Inter-American Coalition for the Prevention of Violence in order to enhance a coordinated multilateral response to violence prevention issues in urban contexts in the Americas.

V. Financial and budgetary matters

78. The draft work programme and budget for the biennium 2010-2011 was presented to the Governing Council, together with the related report of the Advisory Committee on Administrative and Budgetary Questions. The Council approved the proposed work programme and budget. It also approved the general-purpose budget of $66,190,500 and endorsed the special-purpose budget of $95,717,700 for the biennium 2010-2011 detailed in the proposed work programme and budget for 2010-2011. It further approved an increase in the general-purpose statutory reserve from $3,279,500 to $6,619,500.

79. The revised appropriation of the regular budget for 2008-2009 reflects an increase of 55 per cent over the appropriations of 2002-2003. UN-Habitat recalled General Assembly resolutions 56/205 and 56/206 and subsequent resolutions on the strengthening of UN-Habitat, including resolution 62/198, in which the Assembly called for increased funding to support the activities undertaken by the organization; UN-Habitat has been submitting proposals for increased funding in response to those resolutions. However, the regular budget has not been able to accommodate the proposals submitted by the organization. In addition, the planning figure provided as the ceiling for all the respective biennium budget submissions limits the level of funding increases submitted by the organization. Regular budget funds represent approximately 7 per cent of the total UN-Habitat budget. In 2008, regular budget funding stood at $9.5 million, while UN-Habitat general-purpose (non-earmarked) contributions amounted to $20 million. Special-purpose contributions earmarked for specific programme and project activities for the same year totalled $133.2 million. There is a continued imbalance between earmarked and non-earmarked contributions.

80. Adequate, stable and predictable funding, preferably through multi-year financing, would help to reduce the volatility of extrabudgetary contributions and enable the organization to plan effectively for the delivery of its approved work programme and the implementation of the medium-term strategic and institutional plan for the period 2008-2013. UN-Habitat made significant efforts in developing a results framework as part of the plan's preparation in order to foster the principles of results-based management and also to enable the linking of resources to strategic results. Governments are encouraged to consider providing more flexible, "soft"

earmarked funding mechanisms aligned with the approved focus areas of the plan. This will enable the organization to systematically prioritize focusing on the expected accomplishments highlighted in the results framework that has been developed as a road map for the implementation of the plan.

VI. Conclusions and recommendations

81. The global economic and financial crisis has had negative ramifications for practically all dimensions of human settlements development and management. The impact of the crisis has been particularly serious on the poor and low-income groups of society, whose capacity to access decent housing, secure tenure and basic urban services has been significantly impaired. The crisis has also had a negative impact on the budgetary priority that Governments are able to allocate to housing and sustainable urban development.

82. The dialogue on the special theme "Affordable housing finance in the context of current global economic crisis" at the twenty-second session of the Governing Council extensively explored these issues and their ramifications. Participants identified opportunities arising from the challenges posed by the crisis that could serve as a springboard for the development of innovative mechanisms to promote affordable housing.

83. The role of the public sector was deemed paramount in facilitating sustainable urbanization through the adoption of supportive policies and regulatory frameworks that encouraged the setting up of housing funds and microfinance systems to help the poor gain access to credit.

84. The involvement of all stakeholders in these endeavours was underlined, including private sector developers, international, regional and domestic financial institutions, non-governmental and community-based organizations, and international organizations and agencies.

85. **The Governing Council underscored the centrality of the affordable housing finance issue by inviting all member States to assess the adequacy of their respective housing and related infrastructure policies to meet the needs of their populations, in particular of the urban poor and other vulnerable groups.**

86. **Bearing in mind General Assembly resolution 63/221, in which the Assembly invited the Governing Council to keep under review developments in the housing finance systems in view of the current financial crisis, the Council expressed its support for convening a high-level special event at the sixty-fourth session of the Assembly on the issue of housing finance systems in the face of the global financial crisis.**

87. **It is acknowledged that cities are one of the major contributors of greenhouse gas emissions. Cities therefore have a key role to play in climate change mitigation by promoting energy efficiency through more appropriate land-use planning, more efficient urban management and green building practices.**

88. **At the same time, the vulnerability of cities to the effects of climate change is a critical issue of concern. The importance of creating awareness of the implications of climate change for all aspects of human living cannot be overemphasized. As in the case of the financial crisis, those who contribute the**

least to the problem, namely the urban poor, are those who are the most severely affected by it. Such trends, within the context of a rapidly urbanizing world, point to a defining moment in the convergence of the human settlements and environmental agendas and the need to bridge what has been long perceived as two distinct arenas for policy and action.

89. **The present report identifies several areas of follow-up action at different levels. These include the need for Member States to assess the effectiveness of their respective policies in the areas of pro-poor housing and urban development and the need to integrate affordable housing and housing finance as a key means of attaining internationally agreed development goals, including the Millennium Development Goals.**

90. **The key recommendation lies, however, in follow-up at the global level and the need to bridge the architecture and the modalities of follow-up and implementation for sustainable development. This recommendation is based on the acknowledgement that, in a rapidly urbanizing world, attaining the goal of sustainable development increasingly depends on sustainable urbanization. In practical terms, this means that sustainable development will ultimately depend on the quality of city management and planning and the effectiveness of adaptation to and mitigation of the effects of climate change.**

91. **The General Assembly is thus invited to consider convening in 2016 a United Nations conference on housing and sustainable urban development (Habitat III) whose objective would be to review, formulate and adopt updated policies, strategies and approaches to address more effectively the evolving challenges of sustainable urbanization and urban development.**

92. **Considerable progress has been made in implementing the UN-Habitat medium-term strategic and institutional plan for the period 2008-2013. The plan calls for a series of reforms and innovations until 2013 that require a systematic and coordinated approach to programme alignment and cohesion, the improvement of business practices and human resources. Such an approach requires predictable funding, without which improvements can only be made in a piecemeal and intermittent manner.**

93. **Predictable funding, especially on a multi-year framework agreement basis, as was recently agreed with two donors, has proved to be a good way forward and Governments in a position to do so are encouraged to enter into similar agreements that allow the secretariat to plan ahead and prioritize its work in a rational manner and thus realize the anticipated gains in efficiency, accountability and transparency.**

94. **In the face of the challenges resulting from rapid and chaotic urbanization and climate change, UN-Habitat has launched two new initiatives: the World Urban Campaign and the Cities and Climate Change Initiative. These two initiatives, together with the World Urban Forum, will spearhead global advocacy for more sustainable urbanization and provide a coordinated and concerted approach to policy dialogue and development at the global, regional and country levels. In line with the resolutions adopted on this matter, Member States are invited to establish broad-based national Habitat platforms or committees to play an active role in the World Urban Campaign.**